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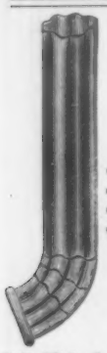

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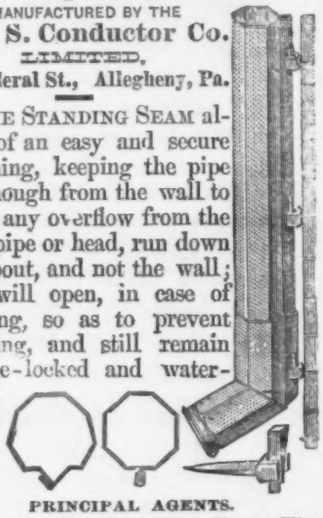

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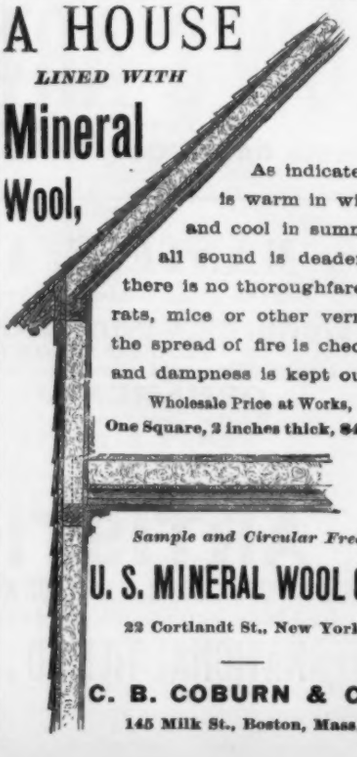

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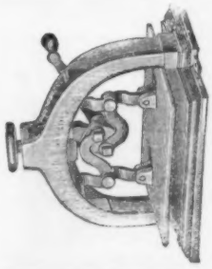

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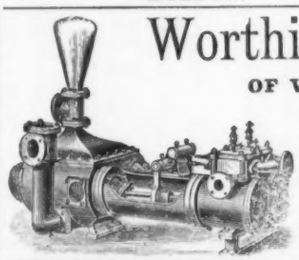

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Cash Capital	$1,000,000.00
Reserve for Re-insurance	635,741.16
Reserve for all other Liabilities,	96,655.57
Net Surplus	832,744.56
Total Assets, January 1, 1883	2,565,141.29

BUILDING MATERIALS.

Reported for the American Architect and Building News.

BRICK.—₱ M.	New York. (*Wholesale Prices.*)	Boston. (*Prices to Builders and Contractors.*)	Chicago. (*Prices to Builders and Contractors.*)	Philadelphia. (*Prices to Builders and Contractors.*)
Common: *Cargo afloat.*				
Pale	$2 50 @ $3 50	Eastern	Building Brick	Hard
Jersey	4 50 @ 5 25	7 50 @ 8 00	6 50 @ 7 50	8 00 @ 8 50
		Bay State Hard		Salmon
Up River	5 00 @ 5 50	9 00		5 00 @ 6 00
Haverstraw Bay	5 50 @ 6 00	Domestic Com.	Indiana Pressd	Stretchers
" 1st	6 00 @ 6 50	8 00 @ 9 00	16 00 @ 28 00	11 00 @ 14 00
		Domestic Face	St. Louis Fronts	Pressed
Fronts:		19 00 @ 20 00	25 00 @ 30 00	20 00 @ 24 00
Croton, Brown	13 @ 14 00	Philadelphia		
" dark	14 @ 15 00	40 00 @ 45 00		
" red	14 @ 15 00	Phila. mould		
Chicago pressed		50 00 @ 80 00	22 00 @ 35 00	
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 @ 41 00		50 00 @	
Glens Falls — white	30 @ 35 00	Glens Falls		
Philadelphia	@ 27 00	25 00 @ 26 00	42 00 @	
Trenton	@ 27 00		40 00 @	
Milwaukee		Glens Falls	25 00 @	
Moulded:		Mould.	60 00 @ 100 00	
Clark's Glens Falls — Red	25 00 @ 27 00	30 00 @ 35 00	30 @	
" — White	30 00 @ 35 00	35 00 @ 40 00	35 @	
White " Mold,	45 00 @ 60 00	45 00 @ 60 00	55 00 @ 65 00	
Enamelled: *Imp.*				
Enamelled (edge)	85 00 @ 100 00	@	@ 100 00	Dom. @ 70
Enamelled (edge and end)	90 00 @ 115 00	@	@ 125 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Chicago Lime in bulk			65 @ 75	
Wisconsin "			80 @ 90	
Rosendale Cement	80 @ 1 00	@ 1 50	*Not Sold.*	1 25 @ 1 65
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland (English)	2 60 @ 3 10	@ 3 20	2 75 @ 3 00	2 30 @ 3 50
" (Saylor's Am.)	2 05 @ 2 40	2 50 @ 3 00	2 75 @ 3 00	2 50 @ 3 00
" (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 75	3 00 @ 3 25
" (Lafarge)	3 50 @ 3 75	*Not sold.*	3 75 @ 4 25	4 50 @
" (Star)	2 70 @ 3 00	*Not sold.*	*Not sold.*	*Not sold.*
K. B. & S. (Eng.) Portland	2 85 @ 3 10		3 35 @ 3 50	3 00 @ 3 25
Burham " "	2 60 @ 2 80		3 15 @ 3 35	2 75 @ 3 00
Vorwohler	2 65 @ 3 25		3 00 @ 3 25	
German (Fewer)	2 50 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" (Alsen)	2 56 @ 2 80	3 00 @ 3 50	3 15 @ 3 35	2 90 @ 3 25
Scientific		1 65	*Not sold.*	
Hydraulic Lime of Teil	3 50 @ 4 00		*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 25 @ 3 50
Keene's coarse	5 00 @ 6 00	@ 7 50	7 50 @ 9 00	6 50 @ 7 00
" fine	9 25 @ 10 25	@ 11 50	11 00 @ 12 50	11 50 @ 12 00
Lime:				
Rockland and Rockport, (Com.)	@ 1 00	@ 1 10	*Not sold.*	1 00 @ 1 25
Rockland and Rockport, finish	@ 1 20	@ 1 15	*Not sold.*	
State, com. cargo rates (nom.)	75 @ 80	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	95 @ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	1 30 @ 1 35	1 70 @ 1 90	@ 1 75	1 60 @ 2 25
" (casting)	1 50 @ 1 65	@ 2 25	@ 2 00	2 25 @ 2 50
Hair (Cattle) ₱ *bush.*	21 @ 23	@ 30	30 @ 35	22 @ 30
" (Goat)	30 @ 35	@ 30	35 @ 40	@
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	75 @ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine			80 @ 90	

(*Continued on page* vi.

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	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia (Prices to Builders and Contractors.)
Foundation:				
Dimension	@	5 00 ₱ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ₱ perch	8 50 ₱ cord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (₱ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone.				
Longmeadow		75 @ 85		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ₱ cub.ft.	
Amherst	1 00 @	90 @ 1 00	55 @ 65	
Berea	75 @ 1 00	80 @ 90	45 @ 55	70 @ 90
Berlin	75 @ 1 00	80 @ 90	55 @ 65	
Bay of Fundy	@ 1 00	*Not sold*	*Not sold.*	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick	@ 1 00	90 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble:				
Lee, Mass.	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 5 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 5 00	1 50 @ 2 50
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	— @ —
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 5 00	
Slate: Roofing (₱ *square*)				
" green	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	@ 7 00
" purple	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" red	@ 15 00	13 00 @ 14 00	— @ 16 00	5 00 @ 5 75
" black, Lehigh	— @ —	Brownville, Me.	7 20 @ 7 60	5 00 @ 5 75
" " Chapmans	— @ —	6 50 @ 9 00	7 30 @ 8 00	6 00 @ 6 25
Tiles, Am. ₱ M.	@	Monson, Me.	*Not sold.*	@ 15 00
		5 50 @ 8 00		
LUMBER. —₱ M.				
(*Ordinary dimensions.*)				
Boards:				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 53 00	44 00 @ 49 00	
" 2d quality	55 00 @ 60 00	42 00 @ 44 00	40 00 @ 46 00	
" 3d quality	18 00 @ 22 00	35 00 @ 38 00	37 00 @ 41 00	
Spruce	@ 25 00	11 00 @ 12 50	*Not sold.*	
Hemlock	ea. 17 @ 18	12 00 @ 12 50	@ 10 00	11 50 @ 15 00
Yellow pine	20 @ 40	30 00 @ 33 00	@ 28 00	16 00 @ 18 50
Cypress	@	@ 35 00	@	@
Clapboards:				
Pine	@	33 00 @ 55 00	14 00 @ 22 00	—@—
Spruce	@	23 00 @ 30 00	*Not sold.*	—@—
Framing Timber:				
Pine			13 00 @ 15 50	25 00 @ 35 00
Spruce	14 00 @ 18 00	13 50 @ 14 50	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	13 00 @ 19 00	12 00 @ 13 00
Yellow pine	20 00 @ 30 00	21 00 @ 25 00		22 00 @ 24 00
Laths:				
Pine	@	2 00 @ 2 25	2 25 @	—@—
Spruce	2 15 @ 2 20	2 00 @ 2 25	*Not sold.*	2 40 @ 2 60
Shingles:				
Pine, shaved	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed	4 00 @ 5 00	@ 4 50	2 25 @ 2 60	
Spruce, sawed	2 50 @ 2 75	@ 1 50	*Not sold.*	
Redwood	2 10 @	@ 3 00	5 50 @ 8 00	30" $10 @ 28
Cedar, split	@	@	*Not sold.*	24" 8 @ 21
Cedar, sawed	@	2 00 @ 3 50	@ 2 30	20" 5 50 @ 14
Cypress 7 x 24	18 00 @ 20 00	5 50 @ 6 00	*Not sold.*	16 00 @ 20 00
Miscellaneous:				
Piles ₱ ft.	4½ @ 6	Piles 6c. ₱ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 22	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	7 @ 14
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ₱ M.				
(*First Quality, Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 48 00	35 00 @ 41 00	
Cherry	80 00 @ 120 00	60 00 @ 90 00	75 00 @ 85 00	55 00 @ 65 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	45 00 @ 60 00	55 00 @ 65 00
Mahogany, Baywood	@ 180 00	100 00 @ 150 00	150 00 @ 180 00	100 00 @
" St. Domingo	@ 350 00	180 00 @ 250 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	50 00 @ 55 00	70 00 @ 80 00
Sycamore quartered		@ 65 00		
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	70 00 @ 75 00	60 00 @ 70 00	60 00 @ 70 00	100 00 @
Rosewood ₱ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 100 00	80 00 @ 120 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	@ 30 00	20 00 @ 30 00
Yellow pine ₱ M	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil,* ₱ *lb.*)				
White lead, Am.	6½ @ 6¾	5¾ @ 6¼	5½ @ 5¾	4 @ 6½
" Zinc, "	5 @ 8½	8 @ 12	7 @ 11	4 @ 8
Red, Am.,	6 @ 6¾	@ 12	5½ @ 6	
" Venetian	6 @ 10½	7 @ 12	1¾ @ 2¼	4 @ 6½
" Vermilion	55 @ 60	55 @ 60 dry	50 @ 75	Am. 12 @ 16
Red Indian, Eng.	12 @ 20	14 @ 20	12 @ 20	12 @ 16
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	4 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	12 @ 20	8 @ 20	9 @ 14
Green, Paris,	16 @ 20	25 @ 40	16 @ 35	14 @ 29
Black, lamp,	8 @ 12	15 @ 25	8 @ 30	12 @ 18
Blue, ultramarine	12 @ 18	18 @ 30	10 @ 35	20 @ 35
Oil, linseed, (raw) (₱ gal.)	53 @ 54	54 @ 59	48 @ 49	54 @ 58
" " boiled	56 @ 57	57 @ 62	51 @ 53	57 @ 60
Turpentine	30 @ 31	35 @ 42	32 @ 34	38 @ 41
Varnish, coach		1 50 @ 6 00	1 25 @ 2 00	1 40 @ 4 00
Shellac		2 50 @ 3 00	3 25 @ 4 00	1 75 @ 3 00
Putty	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting (dry)	50 @ 90	1 @ 1½	1 @ 2	½ @ 7-10
Paris white, (Eng.,)	30 @ 2 00	2 @ 3	2 @ 2½	1 30 @ 1 60
Litharge, Am.	5½ @ 5¾	6½ @ 7	6¼ @ 10	6½ @ 7
Sienna, (burnt)	15 @ 17½	14 @ 20	4 @ 16	5 @ 14
Umber, "	11 @ 16½	14 @ 20	@ 10	9 @ 14

(*Continued on page* vii.)

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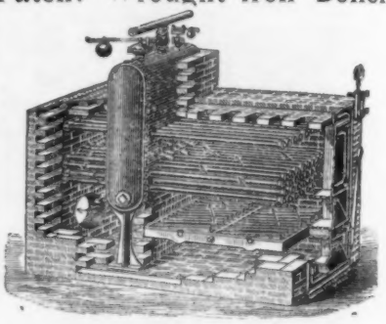

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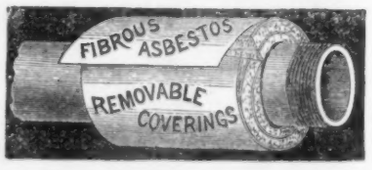

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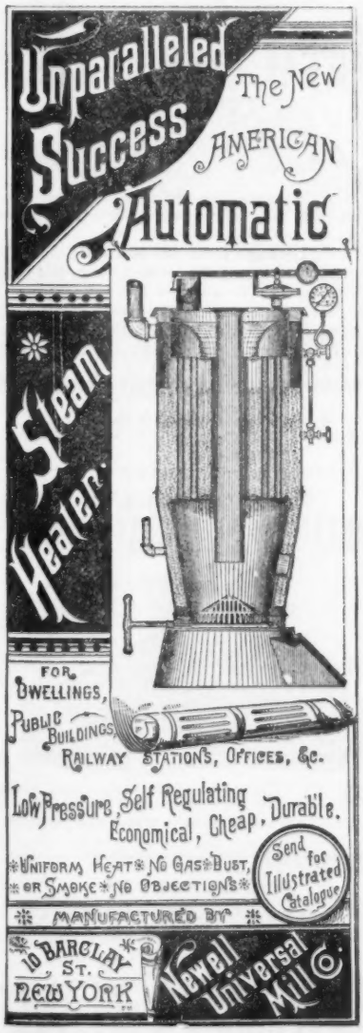
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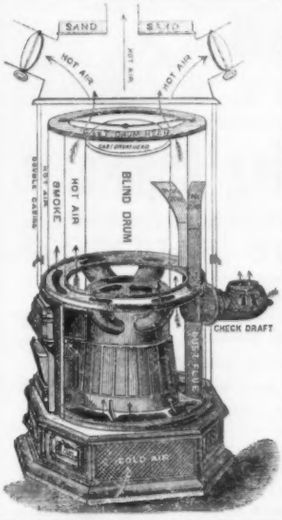

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Spikes, (*wrought.*)	@ 3 75		3 50 @	@ 3 50
10d. common	@ 3 50	@ 2 35	@ 2 60	@ 3 20
Shingle	@ 4 25	@ 3 40	@ 3 35	@ 3 95
Lath	@ 5 75	@ 4 60	@ 5 60	@ 4 70
(*Finishing nails according to size.*)			Add $1 50	Add 1 00 pr cask
(*For casing nails add 75c. per keg.*)				
Butts: 4″x 4″ (₱ doz. pairs.)				
Plain	@ 1 50	@ 1 20	65 @ 1 00	@ 1 30
Japanned	@ 2 50	@ 1 75	*Not sold.*	@ 1 75
Acorn, Japanned	@ 2 50	@ 2 50	2 00 @ 3 75	@ 2 00
Acorn, Boston finish (₱pair.)	@ 75	@ 75	*Not sold.*	@ 65
Bronze metal	@ 2 00	plain 2 25	2 00 @ 3 25	@ 1 75
Brass (for cupboards)	@ 15	@ 10	@ 12	@ 15
Knobs: (₱ *Set.*)				
Mineral, best	@ 15	@ 10	8 @ 10	@ 10
Lava	@ 50	@ 75	65 @ 80	@ 1 00
Hemacite	@	@ 38	31 @ 40	@ 27
Porcelain	@ 40	@ 12	25 @ 30	@ 30
Glass, solid	@	@ 75	*Not sold.*	*Not sold.*
Glass, silvered	@ 1 75	88 @ 1 50	@ 1 50	@ 1 75
Bronze metal	1 00 @ 4 00	88 @ 2 00	75 @ 2 50	90 @ 3 00
Brass	1 50 @ 3 00	88 @ 2 00	1 50 @ 3 00	@ 1 25
PLUMBERS' SUPPLIES.				
(*Subject to inaccessible discounts.*)				
Pipe: (*Per Foot.*)				
Cast-Iron, 4″, d'ble thick 5 ft. length	4 05 @	@ 75	75 @	@ 75
Cast Iron, 2″ d'ble thick 5 ft. length	2 05 @	@ 35	35 @	@ 35
Cast Iron 4″ single thick	3 04 @	@ 36	36 @	@ 36
" 2″ " "	1 05 @	@ 24	24 @	@ 24
Wrought-iron, plain, 2″	46 @	@ 26	46 @	@ 46
" " 1″	19 @	@ 8	19 @	@ 19
" " ½″	11 @	@ 4½	11 @	@ 11
" enamelled 2″	64 @	@ 64	24 @	
" " 1″	28 @	@ 20	28 @	
" " ½″	15 @	@ 11	25 @	
Galvanized-iron, 2″	64 @	@ 30	64 @	@ 64
" 1″	28 @	@ 10½	28 @	@ 28
" ½″	15 @	@ 06	15 @	@ 15
Brass, drawn, ¾″	30 @	@ 25	70 @	
" ½″	25 @	@ 30	75 @	
" ⅜″		@ 45	75 @	
Lead: (*Per lb.*)				
Pipe	6½ @	@ 5½	6½ @	6½ @
Sheet	7½ @	@ 6½	7½ @	7½ @
Traps, S 4″ each	1 90 @		1 90 @	1 90 @
" S 2″ "	1 10 @		1 10 @	1 10 @
" ½ S 4″ "	1 55 @		1 55 @	1 55 @
Bath Tubs: (*Tinned and Planished.*)				
Copper, 16 oz. 6 ft.	19 75 @	@ 19 75	19 75 } @ 25 %	@ 19 75
" 14 oz. "	17 75 @	@ 17 75	17 85 }	@ 17 75
Bath Boilers: (100 *lbs. pressure.*)				
Copper, 16 oz., 40 gals.	28 00 @	30 gals @ 18 00	24 00 @ 20 %	@ 34 00
" 14 " 40 "	32 00 @	40 " @ 21 00	24 00 @ 55 %	@ 32 00
Galvanized-iron, 40 gals. 55%	24 00 @	16 00 @ 17 00	24 00 @ 55 %	@ 24 00
			13 00 @ 15 %	
Solder:				
Iron:				
I-Beams up to 12″	@ 4	3½ @ 4	@ 4	3¾
I-Beams above 12″	@ 4	3½ @ 4	@ 4	
Channel-Beams up to 12″	@ 4 2-10	3½ @ 4	@ 4	

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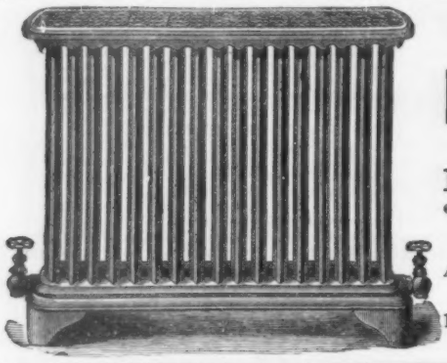

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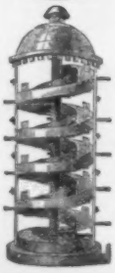

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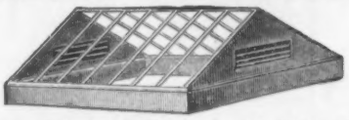

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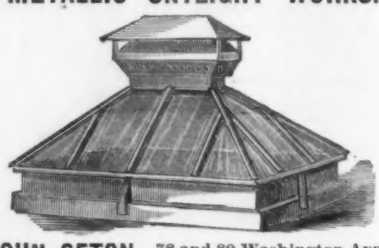

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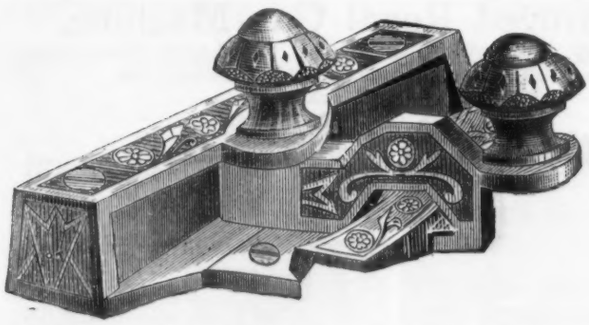

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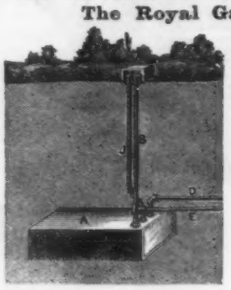

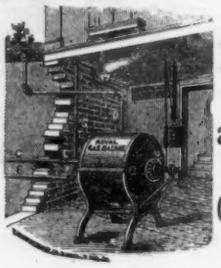

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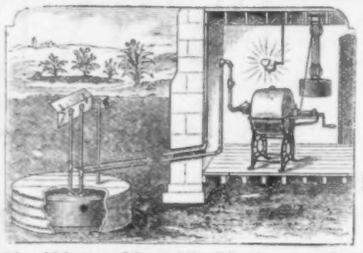

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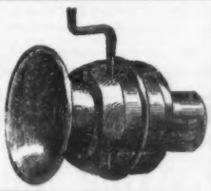

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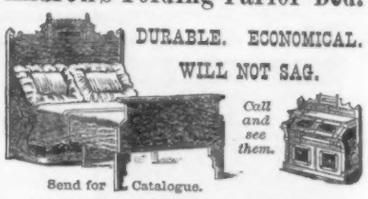

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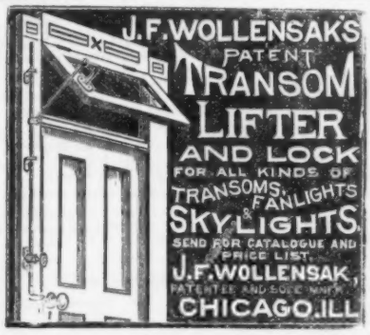

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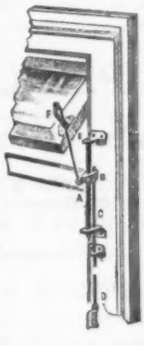

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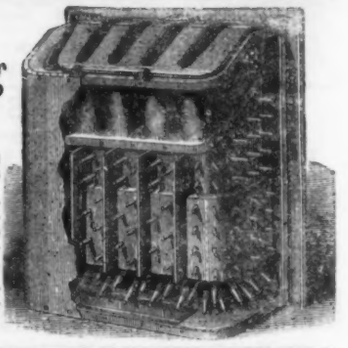

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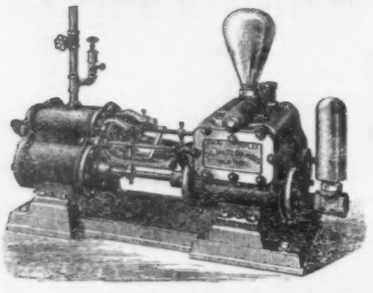

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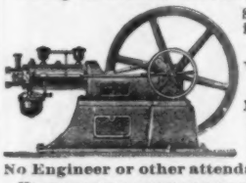

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THE AMERICAN ARCHITECT AND BUILDING NEWS.

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OCTOBER 25, 1884.

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WHAT we should call a Social Science Congress was held recently at Blois, in France, at which, among other things, some very interesting statements were made concerning the experiments which have been tried to promote the improvement of the material and moral condition of workmen, by admitting them to participation in the profits of the business or manufacture which they help to carry on. The first person to apply this important principle in actual business seems to have been the great Leclaire, a workman by birth and training, who, having entered into business on his own account, with a small capital saved from his earnings, was inspired with the idea of using his limited opportunities to put in practice a theory about which he had thought much. He was himself but recently emancipated from the dull and hopeless drudgery of a journeyman, and could feel how much his new responsibility as a master increased his energy, and with it the amount of work which he could do in a given time, and he resolved to try whether the application of this stimulus might not be made on a small scale for the benefit of his men as well as himself. He was too poor and too prudent to bind himself to divide his own earnings among the men, but he reflected that if these, by the hope of securing an additional income for themselves, would work with a zeal enough greater than usual to accomplish ten per cent more work within a given time, he could give back to them this surplus ten per cent without losing anything himself. Wild as this scheme seemed to his friends, Leclaire carried it out, on a small scale at first, but later on a large one; and without, so far as he could see, any loss to himself, he succeeded in improving greatly the material as well as the moral condition of those whom he employed, and left an example which is every year more generally followed.

AFTER Leclaire's first successful experiment, two gentlemen, M. de Courcy and M. Charles Robert, undertook to diffuse the knowledge, and, if possible, the repetition of it, in the industrial world, and it is perhaps owing partly to their exertions that about eighty French manufacturers or contractors now deal with their workmen on this principle, and within the last six years has been established a society for the practical study of the methods of participation by employés in the profits of business. This society is composed mostly of business men or manufacturers, who carry on their "study" in the best possible way, by practising in their own workshops the theory which they favor. Among the enlightened employers who pursue this system is M. Chaix, the proprietor of a renowned Parisian printing-office, which maintains twelve hundred workmen, and keeps more than a hundred presses in operation, and the discussion of the subject at the Congress of Blois was signalized by the reading of an admirable paper by him. Before speaking of his own establishment, M. Chaix remarked that many difficulties interfered with the application of a system of participation, the most serious of these being, perhaps, the inability of workmen without capital to bear any share of the losses which fall to the lot of most business men; so that it is necessary, in order to protect the employer, who furnishes the capital, from the danger of giving away all the profits in good seasons, and bearing the burden of all the losses in bad times, to arrange for reserving a fund for contingencies. This is easily done, and may prevent the total collapse, in an unfavorable year, of an experiment begun with entire success. The form of participation is also unsettled, the practice of different houses varying greatly. Some pay over in cash to each workman his proportionate share of the profits at the end of each year; while others pay nothing in cash, but reinvest each man's profits in the business, securing thus for him, without his control, compound interest on his earnings. The best course, M. Chaix thinks, lies between these two. As he well says, although the principal end of participation is to encourage habits of prudence, order, responsibility, and economy, it is not best to push benevolence to austerity; and the most successful system is found to be one in which a portion of each man's share of the profits is paid over to him in cash at the end of the year, to serve as an immediate reward for the industry of the year, and as a stimulant to renewed saving and effort, while the rest is invested in his name and for his benefit. Another question is, whether profits should be divided in proportion to the wages earned by each man, or in accordance with his length of service, and this, again is variously answered in practice. In the Chaix printing-office, three years of service is requisite for admission to participation, but in order to concede something to the roving disposition of the Parisian workmen, this rule is so far extended as to admit men coming from other offices, managed on the principle of participation, after one month of probation. Once admitted, each man receives a share of the profits of the year proportioned to the amount paid him during the year, either as regular wages or for piece-work. The dividend is paid annually, one-third in cash, one-third as a credit on a reserve fund, the whole of which can be drawn out when the man leave the office; and the remaining third as a credit on a sort of superannuation and insurance fund, which can only be drawn at the age of sixty, or after twenty-five years of service, or in case of death, when it is paid over to the heirs of the deceased man, Credits on both these reserved funds bear interest at the rate of four per cent per annum. The average dividend paid to the men in the Chaix establishment for the last twelve years has been about seven-and-one-half per cent upon the amount of their wages, and the total sum paid to them in this way during that time is one hundred and forty thousand dollars. In regard to the effect of the system upon the workmen, M. Chaix says that its tendency to encourage economy and prudence is shown by the fact that about one-half of the sum paid in cash every year is at once invested by the men in savings-banks, or in life-insurance policies; and it is also remarkable that during the printers' strike of 1878 only sixty-two men, out of the whole number employed, quitted their places, and not one of these was a participant in profits.

WHAT excellent as well as lively journal, *The Studio*, makes some very timely remarks in a late issue upon the carelessness and bad taste which seems to govern the application of signs to commercial buildings. In all our business streets the most prominent feature of the view, whether upward, downward, or across the street, is a mass of signs, almost all of them ugly, coarse, and vulgar, and each trying to thrust itself forward beyond all the rest into the faces of the passers-by. It is needless to say that architects are not responsible for this offensive habit, which tends, more than anything else, to destroy the effect of their façades, designed without reference to the signs; but it is singular that the instances in which some control of the signs has been given to the architect should be so rare. There are a few cases where signs have been put up in places intended for them, of sizes and shapes suited to those places, and colored and lettered according to drawings furnished by the architect; and these signs always attract attention, less on account of their dissimilarity from the ordinary kind than from their real interest as designs, which leads every person of taste to stop a moment to enjoy the carefully studied and artistic shapes of the letters, or the pleasant combinations of color which they present. So far, these architects' signs have been

of the simplest description, but there is no reason why the same taste should not be displayed in more elaborate compositions. There is paint enough, of different colors, displayed on the Broadway fronts, to form, if skilfully distributed, a series of patterns, miles in length, of ever-changing richness and beauty, and it is certain that, until artistic signs become more common than they now are, those who possess them will be rewarded by a corresponding share of public notice.

THE *Builder* mentions that Mr. Petrie, the director of the explorations at Tanis, has returned to London with a collection of the smaller objects found in the excavations. There is an immense number of these, many of them consisting of personal ornaments, of a delicate and beautiful kind. Some of the most curious are mosaics, in glass, of such extreme minuteness of detail as to require a magnifying glass for seeing them properly. Besides these are many little silver figures, worn as amulets or trinkets, and modelled with great skill. The larger objects are mostly of bronze or terra-cotta, the former material being found in a great number of shapes, as in nails, staples, hasps, keys, lamps, and so on, as well as in a lattice window screen of considerable size. A bronze window grating, even of very simple design, would at this day be regarded as a costly luxury, but there is no reason to think that the owner of the house for which this one was made, in the fifteenth century B.C., was richer than many of his neighbors, so that a great deal of such work is likely to be found as the excavations proceed. The domestic architecture of the town seems, in fact, to have been luxurious and elaborate in character of buildings, fragments being found decorated with glass mosaic, while others are covered with delicate hand-worked ornament. Among the more interesting objects, as giving the most vivid idea of the tastes and habits, and even the appearance of the people who lived in Northern Egypt thirty-four hundred years ago, are many fragments of cloth, colored in simple patterns, mostly in red, as well as a quantity of human hair, found with some of the cloth, and probably belonging to the owner. The hair is long and wavy, and of an auburn color, the latter circumstance giving an interesting indication of the character of the race which held and enriched Tanis. A relic of some philosopher also, possibly the lady of the auburn hair, was found, in the shape of a glass lens, two inches or more in diameter. This would be a curiosity, if found in any collection of objects dating beyond the time of Galileo, but as an Egyptian utensil it is of singular importance to the history of science.

LE Génie Civil contains an account of certain semi-artistic industries carried on at Blois, which is of interest to amateur decorators, as well as to collectors of such objects. There is no manufacture, in the ordinary sense, carried on in the town, but the influence of the traditions and examples of pure taste and beautiful workmanship have served to encourage the production of tapestry and decorated earthenware on a commercial scale, by persons who began their work a few years ago as amateurs. One of the most remarkable cases of this kind is that of M. Ulysse Besnard, a young artist, who, after gaining a high reputation in Paris as a painter of genre subjects, returned to Blois, where he was born, and fitted up a studio there. As a decoration for the walls of his room, he painted some tiles in imitation of Italian specimens of the sixteenth century, and had them fired by a local potter. The results of this essay encouraged him to try more experiments, and in order to control more readily the medium with which he worked, he obtained clay and mixed his pastes and enamels for himself, and set up an oven for baking the objects which he painted. His very first works attracted the attention of connoisseurs, and he was applied to so frequently for specimens that he soon found it necessary to abandon his canvases and devote himself entirely to ceramic decoration. At present, the number of his executed works in ornamented clay exceeds twenty-eight thousand, all of them being distinguished by the beauty of their design and color. Although each of M. Besnard's pieces is distinguished by his signature, "Ulysse," they differ widely in style, many of them presenting genre subjects, like those which brought him reputation in his early days, while others are imitated from Spanish, Moorish and Persian works. The processes employed in M. Besnard's workshop are, however, the same in all cases. A red clay is taken for the ground, and over this is spread a coat of white enamel, on which the design is painted. In many of the pieces the decoration is put on the tin enamel before this is fired, but the difficulty of painting well on the soft, powdery surface of the unbaked enamel is so great that the first coat is often fired before coloring, and a second coat put on as a ground for the decoration.

ONE of M. Besnard's pupils, M. Tortat, who occupies now a neighboring studio, has developed a different style of decoration, using the red clay for a basis, but covering it with a ground of blue, gray, green, yellow, or ivory white, instead of the pure white tin-enamel of his master. On this rich foundation he lays decorations of chimeras, masks, and arabesques, in various colors, heightened with touches of white and black. Still another talented and original artist, established in a suburb of the city, has devoted himself to a method of decorating clay differing from that of both the others, using white clay in place of red, and painting directly upon it, covering the whole finally with a brilliant lead glaze. This painter, M. Thibauld, chooses also a style of design peculiar to himself, but inspired by the beautiful faïence of the Italian Renaissance. These gentlemen, with their pupils, are rapidly gaining for Blois a place among the important centres of artistic production; and beside them a lady, Mme. Gagnot-Sausse, has had the courage to reject the stock patterns of worsted tapestry which she found in vogue among those who worked such materials for the market, and to substitute for them reproductions of the delicate and graceful arabesques which she found, ready to be sketched, in the ancient castle. The designs which pleased Francis First and Henry Second seem to have suited the taste of the present age admirably, and two hundred women and girls are now engaged in producing tapestries in the new style.

THE *Union Centrale des Arts Decoratifs*, of Paris, has just held two competitions of considerable interest. In the first of these, open to artists and designers of all nations, medals of different values were offered for the best designs or models for works in stone, wood, clay or glass; in the second, similar prizes were offered for completed works. The first prizes, of which there were two, of equal value, were large medals of gold, worth a thousand francs each, and there were to be in addition thirty bronze medals. The decision was to be given before the fifth day of October, so that the mails will soon announce the result, and the designs and objects selected for prizes will be exhibited in the Palace of Industry in Paris.

THE art of aerial navigation has again been slightly advanced by an experiment made in Paris, about four weeks ago, by the celebrated Tissandier brothers, whose trial, a year ago, of a navigable balloon, was then regarded as an event of great importance. In the present instance the same balloon was used that served in the test of 1883, but additional power of movement was secured by increasing the size of the zinc plates used in the battery which furnished energy to the electric motor, and by using a much stronger exciting liquid. With the help of these, a force of one and one-half horses was obtained, and the propelling screw was driven at the rate of one hundred and ninety turns a minute. The balloon was allowed to ascend to a height of thirteen hundred feet above the earth, and found at that point a breeze blowing from the northwest at the rate of about seven miles an hour. The motor was then set in operation, and drove the balloon at the rate of nearly ten miles an hour, so that it was rapidly steered through a complete circle, and then moved against the wind as far as Grenelle. The ascent was made late in the afternoon, and, as it was getting dark, the aeronauts then allowed the balloon to float away to the suburb of Varenne, where they descended safely. Although the voyages made by the Tissandier and Renard balloons seem to us absurdly short, they indicate, nevertheless, that the time is not far distant when balloons of a force as much superior to them as that of a steamship is to the weak struggling of a dory, will navigate the air to some practical purpose. No attempts at doing this have ever yet been really made, but the evolutions of the ingenious toys which the French engineers have devised will soon point the way for applying the principles which they discover to air-ships made with serious purpose.

RESTORATION OF WESTMINSTER HALL.

LONDON, September, 1884.

SHORTLY before the close of the last parliamentary session, Mr. Pearson's plans for the restoration of this historical building were exhibited in the Library of the House of Commons, and his exhaustive report which accompanied them was printed by order of the House. When bringing the subject before Parliament, Mr. Shaw-Lefevre, the First Commissioner of Works, announced that, should there be serious opposition to the general scheme of Mr. Pearson's designs, he would ask for the appointment of a select committee to consider the whole subject; but that in the event of their general approval, he would ask for a vote to commence the work during this autumn. Later on, he intimated that as there was a "general concurrence of opinion favorable to the plans," he proposed to begin operations, and obtained a small vote for the purpose. Thus, then, we may consider that generally the designs as shown in the Library of the House have been adopted, and are about to be carried out, and we therefore propose to examine them with the interest their importance, both historically and architecturally, seems to demand. Mr. Pearson's report is, in every sense of the word, a most valuable document. It is in fact a history of the building, from its foundation by William Rufus, in 1097, to its renovation by Sir Robert Smirke, in the reign of William IV, and between these two Williams is comprised a period of something like seven hundred and forty years of English history, in most of which the great Hall at Westminster is more or less mixed up. Mr. Pearson is not only an accomplished architect but a learned archæologist, and this report alone is a sufficient justification of Mr. Shaw-Lefevre's opinion of him, when he said: "There is certainly no architect in the country better qualified, whether from his great experience in such cases, his great knowledge of Gothic architecture, or his well-known tenderness in dealing with restorations, to investigate the subject." And accordingly we have a minute and careful account of its checkered career throughout those hundreds of years. We are told of its foundation, of its repairs, of its burning, of its rebuilding, of its additions, of its partial demolition, of its restorations and repairs over again, till the recasing of its walls by Smirke; and now again, in his own designs, Mr. Pearson takes up the thread of its history, telling us what he proposes to do, and his reasons for it, adding thus another half-century to its story.

Mr. Shaw-Lefevre tells us that when he first took up the matter, all he expected to have to do was simply to restore the walls and the flying-buttresses, and probably lengthening the windows (which are rather short) on the west side to about the same proportions as those on the east side, and the thing was done; but in going to such a learned pundit as Mr. Pearson, he evidently reckoned without his host. Mr. Pearson immediately plunged into his researches amongst old books and prints and foundations, and the result is the designs we are now considering.

After passing through various vicissitudes, the most important event in the Hall's life, after its foundation, seems to have been its rebuilding, by Richard II, at the end of the fourteenth century. He built the magnificent roof as we now see it, and the great flying-buttresses to support it, inserted the side windows, and generally gave it the form with which we are all familiar. In addition to this, Mr. Pearson, grubbing amongst the old foundations and marks and indications on the walls and buttresses, finds that he also built a double-storied cloister under the flying-buttresses along the west side of the Hall, and not only this, but that in early English times there existed at the north end of the Hall, and at right angles to it, a wing or projection of considerable size, and against which the double-storied cloister abutted. These out-buildings have long since been destroyed, but their foundations have been laid bare, and they give the key-note to the new scheme of restoration. Rebuild this double-storied cloister, says Mr. Pearson, and you have a fair idea of the appearance of the Hall in the days of its glory under Richard II. He claims to have found enough remains to enable him to do this with tolerable accuracy, but as he can hardly say the same for the projecting building at the northwest angle of the Hall, since it was destroyed and rebuilt more than once, he proposes to adhere to its dimensions in regard to plans, and carry it out in harmony with the rest of the work of the time of the said Richard. All this sounds feasible enough, though it must be confessed it looks somewhat like merely building for building's sake, since some use or other has to be found for the two long, narrow stories of the cloister and the two rooms of the projecting wing. Accordingly, the upper floor of the cloister, it is said, might be useful for keeping papers in, and the ground floor for a carriage-drive; the upper floor of the wing for the use of "grand committees," whatever that may mean; and the ground story as a "stand for horses," in place of the old shed now on the site. The first thing one is apt to think about it is: Is this the most likely method the builders of Richard II's time would have employed? Parliament sat in the Hall in his time, and doubtless the rooms along the west side were required for business connected therewith; but to build them now without a purpose, just because their old foundations have been discovered, seems a strange doctrine to preach. We are told, however, there are other reasons; first, the old Norman wall now exposed needs the protection of such a cloister to preserve it from destruction, and secondly, the west side of the Hall was never meant to be a "front," but had always buildings of some kind alongside of it; also, that no instances of flying-buttresses such as we have here are ever found without some low aisle or building between and under them; and that lastly, Mr. Pearson tells us that even from a "purely architectural point of view, it is the treatment he would desire to see carried out."

From a careful examination of the report and the remains it speaks of, we are inclined to think too much weight is being attached to what after all is very slender evidence indeed, and even after we have got this double-storied cloister it may be fairly said to swamp the buttresses and hide nearly all the side of the Hall itself. The "carriage-drive," some eight or nine feet below the level of the surrounding streets, and into which you have to wriggle in and wriggle out, is surely a mistake, while if it is desired to provide rooms alongside of the Hall, for any or most of the reasons above quoted, why cannot the cloister be one story high? The advantages gained would be that the windows of the Hall could then be seen, and the flying-buttresses stand out as leading features in the composition.

Mr. Pearson indeed included an alternative design for a one-storied cloister among his drawings, and his opinion thereon is entitled to every respect. He says in his report: "I can conceive no advantages from this (one-story) treatment; there is no gain in accommodation, and the elevation is much impaired. To carry it out would be to discard the distinct evidences which remain of two stories having formerly existed." As to the question of "accommodation," it is rather wide of the mark, seeing a point has to be strained to find a use for the "accommodation" after it is provided; as to its effect on the elevation, that may be a matter of taste; as to the rest, if we are to restore in the style of Richard II, why not work in the spirit rather than the letter of the fifteenth century? Can it be supposed for an instant that when Richard remodelled his Hall and built his cloister, he cared a brass farthing for any old lines of foundations he might come across in the process, or considered himself bound to follow them, and build rooms, whether he had a use for them or not, or, for the matter of that, he even had any particular respect for the old work he destroyed? Not a bit of it. He doubtless set about to build only what he required, making the useful beautiful in the spirit of all true art. A great deal of nonsense is gravely promulgated under the plea of "restoration." By all means preserve all the old work we can; it is so much history, which we have no right to destroy. But when it is a question of rebuilding, which this cloister essentially is, why on earth should we be bound to build a long, semi-useless corridor, of two stories, each twenty feet by two hundred feet, simply because Richard II did so before us? Richard built the best architecture he could, and we may be sure never troubled himself about such superfluities. Mr. Pearson can give us quite as good architecture, even from a strictly art point of view, as ever Richard bequeathed to us, but he cannot give us the old work back again; it will be only an imitation, after all is said and done, always open to question, historically, if not architecturally. If a cloister must be built to preserve the old Norman wall, well and good. Let Mr. Pearson design one for the purpose, and doubtless it will in every way help the elevation and dignity of the Hall; but don't hamper him with a pretence. Let it be his own, in fifteenth-century Gothic if you like, and in harmony with the old work, but adapted to its purpose and nothing more.

If all this can in any way be urged for the cloister as now designed, what can be said for the wing at the northwest angle? It was originally built in the thirteenth century, but it is not pretended to restore *that*. No; only the ground plan is adopted, the architecture being that of our friend Richard again. Does it help the grouping? Seriously we question it very much. Certainly it cuts off the view of the side of the Hall as one approaches it from Parliament Street. With all due deference to Mr. Pearson's cultivated taste and matured judgment, is he wise in hampering himself with all these complicated problems of "carriage-drives" he cannot very well get into, and "grand committee" rooms which are out of the way? Would the old Hall not look grander and nobler with its long, impressive side unbroken by any "wings," with its old windows and splendid flying-buttreses well defined, and with a moderate-sized cloister, if you like, running between and under them?

Mr. Pearson's designs also embrace the heightening of the towers at the north end of the Hall, and here we think he is clearly in the right, though he admits it cannot be defended by any "reference to history or past record." He is quite right in saying the whole present front "has an air of spuriousness," and that his remodelling of the towers will render them more "worthy of their position and importance in the group in which they now play so insignificant a part." And how charmingly his towers are designed! Unhampered by any idea of reproducing some questionable past, he is thoroughly at his ease, clever and graceful in design and pure in detail, as he knows so well how to be. Architecture is, after all, something more than a mere study in archæology; here we have the artist at his best. He tells us he designed his new upper stage in two floors to preserve a more domestic character, and to harmonize Sir Charles Barry's work with that of the old Hall, and we think he has admirably succeeded. No one could mistake them for "church" towers, and cutting the

stage into two floors seems to keep it more in scale with Barry's elaborate work. We consider this remodelling of the north end by no means the least important part of the so-called restoration; on the contrary, it is a most essential element. Correspondingly, at the south end of the Hall, the north side of St. Stephen's porch (against which it abuts) is shown to be completed in the style of Sir Charles Barry's work, as Mr. Pearson believes Sir Charles himself "would have desired to have seen it completed under present circumstances," and it is needless to add it is thoughtfully and artistically done. In matters of minor detail, the side wall of the Hall is shown to be battlemented, and the modern dormers are got rid of, showing sound judgment in both cases; but as the interior is not over-well lighted at present, why not lengthen the windows of the west side to the same proportions as those of the east? This we know Mr. Shaw-Lefevre thought of doing from the first.

Another point of much importance must still be noticed, and that is the sunken condition of the Hall itself. Its floor-line is some eight feet or so below the level of the surrounding streets. It is in "a hole," as some one has said, and this is one of the difficulties of the problem. It is so difficult that, in order to make his carriage-drive or shelter, or whatever it is, on the ground floor of his cloister, at all accessible, Mr. Pearson is obliged to propose to lower the levels of New Palace yard, so as to get into it from the north, and make a long, inclined plane for a similar purpose towards the south—a clumsy arrangement altogether, it must be confessed. Now there is on an average a space of about seventy feet wide from the outside of the flying-buttresses to the street line of the old Law Courts, and it would certainly be a pity that this small space should either be cut up by "inclined planes" or encumbered with buildings as it was formerly; but surely with a little judicious arrangement of the levels of the ground along the west side of the Hall, and a liberal allowance of green turf, the dip might be got over in such a way as rather to assist than detract from the height of the building itself. Any clever landscape gardener could manage this, as once the so-called "carriage-drive" is got rid of, the problem is shorn of half its trouble. Indeed, it is really the said "carriage-drive" proposal that creates any serious difficulties at all. Once give it up, and the matter is comparatively simple; once give up the double-storied cloister for a single one, and the "carriage-drive," dragged in to make "use of" unneeded accommodation, vanishes with it.

Another project for disposing of the levels and other matters is to erect a new wing northwards from St. Stephen's porch, on the site of the old Law Courts, as originally proposed by Sir Charles Barry, thus placing Westminster Hall in a court-yard and out of sight. This would certainly give plenty of "accommodation," which, however, Mr. Shaw-Lefevre tells us is not wanted. But it would at the same time close up the open space now gained, block up the view of the grand old Hall, and destroy what is unquestionably one of the most interesting groups of buildings in the world. We may therefore rest assured this will not be done. Indeed we feel sure that if Sir Charles could see the view now, he would be the first to abandon the proposal.

The Government invited criticism on the plans; we have endeavored to do so fairly and impartially. They are so fortunate in their architect, that it seems a pity he should be asked to build what may afterwards be found to be a mistake. There is a considerable feeling that the objections we have urged are well founded. Surely, as another critic has remarked, "a little delay would be better than a wrong decision."

Mr. Pearson goes carefully into the question of cost; we do not propose to follow him there. We are told the total will be £35,000, a mere nothing for a country like England, and cost should certainly not be the primary consideration in dealing with one of the most historical buildings in the empire. If the work is worth doing at all, it is worth doing well, *very well*, and if it costs £50,000 instead of £35,000, it will be well worth the money. It is very much more important that we make sure of doing the right thing, than the cheap thing, and if that is secured, nobody will grudge our clever First Commissioner the outlay; the money will be voted without a murmur.

THE VENTILATION OF THE HOUSES OF PARLIAMENT.

THE description of the arrangements for heating and ventilating the Houses of Parliament published in the *American Architect*, for September 20, will make the following statements more intelligible to our readers:

In last July the members of the House of Commons were compelled to complain of the prevalence of disagreeable and noxious smells. A select committee was appointed, with Mr. W. H. Smith for chairman, to investigate the subject. The evidence has been published as a Parliamentary paper. Dr. John Percy, who has charge of the arrangements for the ventilation of the Houses of Parliament, was the first witness examined, and he told the committee that he could not give any information as to the cause of those smells, but he was perfectly certain that they did not arise from any condition within the House. The apparatus employed for the ventilation of the Houses of Parliament, with the exception of some minor improvements, such as the addition of an accessory machine for injecting the air, has been correctly described in the report of 1866. The fans for propulsion of air have been abandoned, and ventilation is now produced by heat applied through coke fires of the simplest construction. In very hot weather, a sort of double-acting pump is likewise used for injecting the air, which is drawn from the river front. Some years ago Dr. Angus Smith was commissioned to test the air which passed through the House of Commons on one of the fullest nights, the House being quite crowded. He took samples of the air from different parts of the House; he took some of the air which had passed through the ladies' gallery, and his report was that he could find no sensible difference between its composition and that of the external air. The conclusion to be drawn from the experiment was that the ventilation is so rapid in its effects that there is no contamination of the air by the presence of several hundred people within the building. The air can be changed in every part in ten minutes. It is regulated according to the number of people in the House; and by long experience the assistants are so well trained, they know exactly what the right quantity of air is. Dr. Percy's principle has always been that too much air cannot be given, provided there is no sensible draught; that is a fundamental principle, he believes, in ventilation. It is found that if the velocity of the air does not exceed one foot six inches per second, then the majority of people will feel no draught. That was determined by Sir Goldsworthy Gurney, and Dr. Percy's experience confirms the accuracy of the statement. At that rate, the thermometer being 60° Fahrenheit, the motion is not sensible; but a good deal depends upon the temperature. The slightest movement of the air in very cold weather becomes very sensible.

As regards the cooling of air, Dr. Percy said that if he had the power of cooling the air to a low degree, he would not take the responsibility of cooling it very much in hot weather, because then great danger would arise to the members. But the air can be cooled to the extent of several degrees by causing it to pass over blocks of ice in the passage through which the air comes from the river front. It is also more or less cooled by the action of spray jets. That is a little apparatus for the injection of a small stream of water from a high elevation upon a small disc in front. The water seems to become pulverized. It is converted into a fine spray which covers a circle of about nine feet in diameter. In weather when it is necessary to raise the temperature, the air is moistened by steam. But there is great difficulty in producing steam free from odor. At one time leaden pipes laid in open troughs were used; but the steam so produced from the water in the troughs was not quite free from smell, and Dr. Percy had a great deal of difficulty. At last the expedient was adopted of passing the steam through large copper tubes or pipes, and letting small jets of water drop down upon the pipes. In that way steam is generated which is perfectly odorless, and the plan was found so successful it is still adopted. The sewers are ventilated in a simple way. There is a little chimney-shaft communicating with the main sewer which passes along near the base of the Clock Tower. At the base of the Clock Tower there is a large fire kept burning, and in front of that fire there is an opening connected with the sewer, up which the sewer-gas passes. So satisfactory was the evidence of the officials respecting the ventilation of the Houses of Parliament, it is not surprising the committee came to the conclusion that the noxious smells did not arise from any deficiency in the sanitary arrangements of the Houses of Parliament. At the same time it was said that it would be impossible for the most perfect system of ventilation to prevent the entrance of offensive smells if they pervade the atmosphere outside the House.

The evidence made it plain that there was a possibility of the sewers in the neighborhood of the House affecting the air. In spite of what surveyors might say, there were too many witnesses to testify to the malodorness of the atmosphere when some of the flaps were opened. But there was also some other cause more remote, and the committee if they have not been successful in tracing it, are at least on the track. It was supposed, for example, that the smell was derived from the potteries in Lambeth. Mr. Henry Doulton was, however, able to explain that no smell or odor of any kind emanates from his firm's potteries, with the exception of the salt fumes which arise for a short time when the kilns are at a very high heat. There is no vegetable matter in the clay, and calcined bones are never used. About a year ago Messrs. Doulton felt aggrieved by the unwarranted statements respecting salt glazing, which had been made by members of a deputation to Sir Charles Dilke. They explained their process to Dr. Angus Smith, and he said there had been gross exaggeration. But Messrs. Doulton were eager to remove even the semblance of a nuisance, and, after several experiments, they have been able to reduce the quantity of salt, so that fastidious persons would hardly say there is the least nuisance. Mr. Fletcher, the Chief Inspector of Alkali Works under the Local Government Board, gave evidence to the same effect, comparing the results of experiments in St. Helen's Pottery, and he found that the air at Lambeth now contains only one and one hundredth-and-fifty-seventh part of the quantity of salt which he found in 1873 at St. Helen's. Messrs. Doulton have done much to put down the bone-boiling nuisance in Lambeth, but now the place is made a receptacle for much of the refuse of London.

One of the members of the committee was Sir Lyon Playfair, and it is remarkable that from his own observations he was able to demonstrate that the offensive odors have been perceptible over a large district of London for more than two years. Sir Lyon's house is in Onslow Square, and during the hot weather of 1884 and 1883 it has been found impossible, owing to that cause, to keep the windows open at night. The odors pass over the district generally between two and three o'clock in the morning, occasionally at seven o'clock at night, and sometimes but rarely on Sunday evenings. The medical officer of health for Kensington has received numerous complaints on the subject. He believes the origin of the smells is to be found in the brick-kilns at Shepherd's Bush and Hammersmith, where the refuse from dust-bins is burnt. Sir Lyon Playfair, who has the acute smell of a chemist, says he believes the smells arise from some burning matters, and from the presence of clay, or a combination of impure clay and impure fuel. At Kensington the odor appears to prevail when the wind is from the west, at Onslow Square it is when the wind is from the south-west. The dust-yards, where refuse that cannot be sold to brickyards is consumed, and of which there are several within a limited area of the Houses of Parliament, are also considered to be a source of nuisance, although the inhabitants of the neighborhood make no complaints about them to the sanitary officers. The evidence would thus seem to point to the conclusion that the noxious smells which gave annoyance to many other people, besides Members of Parliament, proceed from dust heaps, refuse of furnaces, or from gases emitted from gas-works, saccharine works, and other factories. As it was recommended that an officer of the Local Government Board should be directed to make further observations, it may be assumed that in the next session much more will be heard on the subject. — *The Architect.*

ART IN CHALDEA AND ASSYRIA. — II.[1]

WITH such methods of construction as have been described, we are not surprised to find that Chaldean and Assyrian architects secured space by lateral extension, not by elevation. The Assyrian palace covers an immense extent of ground, and consists of an infinite number of rooms grouped around various interior courts. There seems to have been no second story in our sense of the word. If a few rooms were elevated above others they appear to have been raised on a solid foundation, not superimposed on the lower voids. To obviate the insignificant appearance that even the largest building of this sort would have presented, set in the midst of a limitless plain, the architect raised his palace on one of those lofty mounds, to which I have already referred. Its summit was carefully paved, and it answered the further purpose of providing an imposing court around the palace proper. These mounds still stand, but the palace walls, even in the best-preserved examples that have yet been unearthed, seldom retain a height of more than ten or fifteen feet. Their thickness varies from twelve to twenty-eight feet. The rooms they encircle are rectangular, almost always longer than broad, and sometimes elongated so as to be, more strictly speaking, galleries rather than rooms. The temples and so-called observatories, known to us as "staged towers," were likewise raised on mounds and consisted of a series of cubes, decreasing in size, that were placed one upon another, and encircled by external ramps or stairways.

The arch plays a prominent part in Mesopotamian architecture. Necessity prompted its invention; for how could such small units of construction have been used without its aid? It must have been first used in Chaldea, but the only existent examples of its true-centered form stand on Assyrian soil, though specimens of the false, "set-off" vault may be seen among the tombs of early Chaldea. The gateways of the town of Khorsabad which had not perished, were roofed with semi-circular vaults. One, demolished by M. Grace, for the examination of its structure (after it had been mutilated by the removal of its sculptures), was built of bricks, not burned but carefully dried and skilfully cast into the requisite shape for voussoirs. The side walls passed into the vault without any break or preparation, and the arch had no inward projection. Three rows of voussoirs were superimposed upon each other; but there were no mouldings or structural decorations of any kind. A softer clay was used to bind the bricks together.

Excellent drains — perhaps the most admirable results of Mesopotamian building — traversed all sub-structures. Their construction was extremely skilful, and showed various curious methods of vaulting. Pointed-arched forms were here employed at times, but there is no evidence to show that any but the round form was used in visible places. M. Perrot examines these drains and conduits at length, as they give valuable information with regard to the origin of the keyed vaults in its various shapes. The old idea that the Etruscans were the first inventors of the vault has been exploded by later discoveries. We know now that the Egyptian well understood its principle, though his use of large stones obviated the necessity of making it a prominent feature in his work. But the Assyrian employed it in many forms, on a large scale, and in the most conspicuous functions. And knowing how he clung to Chaldean traditions, and remembering that small units were alone at the command of the Chaldean builder, we may believe that the latter, too, was skilful in its use from very early times, though no relics remain to prove such proficiency. The vault was in fact the necessarily national mark of Mesopotamian work, as the column with its lintel was of Egyptian. It is thus impossible to say to what nation we should credit its first invention. Most probably it was more than once invented; most probably the Egyptian, the Chaldean, and the Etruscan each evolved it for himself as necessity arose, and that neither received it as a lesson from the other. But to the Assyrian may unhesitatingly be accorded the credit of being the *greatest* vault-builder of antiquity.

We realize this very clearly when we enter upon the much-disputed question as to the mode or modes of roofing he adopted. But before summarizing what M. Perrot has to say upon this subject, I must give a word to the use of the column in Mesopotamia.

To Chaldea we should hardly look for stone columns. And in truth all we find there are traces of cylindrical piers (built of bricks specially moulded for the purpose, or of fragments of stone bound together by a coating of masonry), and sculptured representations of slender columns, the nature of which is clearly revealed by their appearance: they were evidently of wood, covered with a sheath of metal. Passing to Assyria we find that an actual wooden column, covered with metal representing the scales of a palm-tree was discovered in a fragmentary condition by M. Place, at Khorsabad. And the hint thus received from Chaldea was also carried out in stone, but only in a timid and subordinate way. Only one fragment of a stone column has been found in all Assyria, and again by M. Place at Khorsabad. It is of carefully worked limestone, about forty inches in height, and includes in one piece the capital and a portion of the shaft; thus plainly showing that it is a survival from similar works in wood. The shaft is plain, and the capital cushion-shaped and decorated with raised lines forming festoons or scallops. This type seems to have been frequently repeated, for we see it with but slight variations in four bases found in position in front of the palace of Sennacherib. But the most common type of capital — as proved by the sculptured pictures and by many objects of industrial art — was the capital with volutes, originating in ancient Chaldea, afterwards to be seized upon by the Greeks, and beautifully developed in their Ionic order. From the same source we learn how these columns were used — to support the roof of small temples or open pavilions; to form an open upper story or *loggia* in country houses; to make a small porch — by no means a portico, in the Greek sense; or to support the roof of a covered gallery that stretched from the palace door to the edge of the platform-mound. Furthermore we learn that a row of animals placed at the foot of a façade sometimes supported such bases on their backs, which bases supported in their turn columns that were affixed to the wall, apparently for the sole purpose of decoration. Diligent research has thus demonstrated the existence of the column in Assyria, but it has proved at the same time how unimportant were its uses; that it was employed mainly, to quote M. Perrot, "for the decoration of out-buildings." The whole genius of Mesopotamian architecture was opposed to its employment as an important structural feature. The colonnade as the Egyptians and the Greeks understood it was never developed; and that combination of shaft and arch which in the hands of Mediæval builders produced the most wonderful and almost the most beautiful architectural effects that have ever been attained, certainly never occurred to an intelligence which was keen and great in its own way, but was evidently not of an innovating kind.

Let us return now to the question of roofing. An infinite deal of discussion has been printed on the subject, and even the explorers who are best entitled to our credence, here differ among themselves. Mr. Fergusson's "*Palaces of Nineveh and Persepolis Restored*" has done more than any other book to popularize the subject among those who speak our language. His theories, as M. Perrot says, "are implicitly accepted to this day by English writers." And yet as our author adds — giving ample warrant for his verdict — they are "purely fanciful." Mr. Fergusson founded his opinions less on the testimony of Assyrian work itself than on that of the Persians in the later relics of Persepolis. Indeed, at the time he wrote Assyrian evidence was not sufficiently full to warrant any theory. Speculations were alone possible, and Mr. Fergusson's speculations — formulated in that *ex cathedra* manner which has misled the popular mind with regard to other architectural questions as well as this — have certainly not been sustained by later discoveries. When he wrote Mr. Layard had not yet published his second narrative or his second book of plates; nor had M. Place yet described the palace of Sargon, which to-day is our best known, most completely uncovered, and most instructive example. His book, with its elaborate Assyrian restorations patterned after the hypostyle halls of Persepolis, proves nothing save how unwise it is to hold an imaginary theory, and to attempt

[1] *A History of Art in Chaldea and Assyria*, from the French of Georges Perrot and Charles Chipiez. Illustrated, translated, and edited by Walter Armstrong, B.A. London: Chapman & Hall, New York: A. C. Armstrong & Son, 1884.

Continued from page 176, No. 459.

to prove it by imaginary evidence. No slightest trace has been discovered, as M. Perrot explains at length and in a conclusive manner, of the great interior rows of supporting columns which his arguments demand.

The immense heaps of rubbish — consisting of brick-earth mixed with broken bricks and pieces of stucco — that fill all Assyrian ruins, prove that the roof must have been of great thickness. Indeed, we might expect as much, for that protection against heat which was insured by the immensely massive wall, must have necessitated massiveness overhead as well. Wooden beams could not have supported such a superincumbent weight, even if they could have been obtained long enough to serve in every case. A *vault of crude brick* seems to M. Perrot the most probable device, and the one most in keeping with the general character of Assyrian building. And such a vault would have been amply able to support the immense weight that is proved by the rubbish found to-day. A curious item of evidence is that the terrace-roofs of modern houses in the East are kept in condition by being rolled with heavy cylinders of stone, and that similar cylinders of enormous weight were found by M. Place pierced at each end with a square hole into which wooden spindles had been inserted. Such a roof would perish quickly with its supporting vaults, were constant care once relaxed; but the soft materials of which both were formed would not injure — would indeed, protect from injury — the sculptured slabs of the interior. And such is the condition of things in the Assyrian mounds to-day. Traces of fire have occasionally been found, and in these traces the theory of wooden ceilings once seemed to find confirmation; but as evidence has accumulated, such instances prove to have been but rare. In the hundred and eighty-four rooms and twenty-eight courts M. Place uncovered at Khorsabad, he failed to discover the slightest sign of fire. Nor were there any remains of the timber supposed to have been used, though portions of it, in the absence of any conflagration, must surely have been preserved, since near the doorways pieces of broken beams and panels were discovered. This might be esteemed but negative evidence. Positive evidence, however, exists in the vaults still in place in the drains and conduits, and the city gateways of Khorsabad, and in the bas-reliefs, upon which we constantly see arched openings represented. And even more positive evidence than this has been unearthed. In the most deeply buried portion of Sargon's palace, blocks of clay were exhumed, the undersides of which were hollowed segmentally, and covered with stucco; and, most convincing of all, even a section of a tunnel vault was found, the blocks of which still adhered together, though it had fallen bodily from its place. Its under surface showed signs of decorative painting. The existence of such vaults explains, not only the thickness of the outer wall, which might be attributed solely to the desire to exclude heat, but the thickness of the interior dividing walls also; this, as I have said, varying from not less than twelve to as much as twenty-eight feet. The advocates of the timber-ceiling theory found one of their strongest proofs in the great length of most of the rooms as compared with their width; but the peculiarity is equally well accounted for by the difficulty of building a crude brick or *pisé* vault which should be of great dimensions in *both* directions. MM. Flandrin, Loftus, Place and Thomas are the authorities upon whose opinion M. Perrot bases his own, and their theory of vaulted ceilings rests, to quote his summary, upon several distinct pieces of evidence: "in the first place the incontestable fact that the entrances to the town of Khorsabad were passages roofed with barrel vaults; secondly, the presence amid the débris of the fragmentary arches above described; thirdly, the depth of the mass of broken earth within the walls of each chamber; and finally, the singular thickness of the walls, which is only to be satisfactorily explained by the supposition that the architect had to provide solid abutments for arches that had no little weight to carry."

Of course it is impossible to decide just how the Assyrian vaults were constructed, but the great skill they imply need not seem to us improbable. The Assyrian clay has been found by modern explorers more tough and plastic than any other with which they were acquainted. And even to-day the ignorant workmen of Mesopotamia are clever at vault-building, dispensing even with the assistance of any centering.

The vault in its most perfect development, in the shape of the dome, is also believed to have been familiar to the Assyrians. We could hardly have stronger testimony to this fact than that borne by certain bas-reliefs illustrated in M. Perrot's volume — sculptured representations of towns in which the most important structures are covered by semi-circular or conical domes. Such domes are not only common to-day in the East, but the line of their descent may be traced down through the ages. In the typical-domed buildings of this part of the world, says M. Place, in Byzantine churches and Turkish mosques, we see "nothing but late examples of a characteristic method of construction which had been invented and perfected many centuries before at Babylon and Nineveh." No Assyrian domes exist, but they are universal in the relics of a later age, in the remains left on Mesopotamian soil by the Parthians and the Sassanids. And these structures, too, were built of brick. Some day when the history of the arch and dome shall be fully written; when we shall have consecutively described for us those buildings of Parthia, later Persia, Syria, and Asia Minor that are still but vaguely known to the general reader, but are so interesting and historically so important; and when the story shall have been carried down through the Byzantine centuries into modern Europe, we shall better appreciate the immense and double importance of Assyrian architecture. We shall better understand how its influence not only affected the Greeks — as, for example, in their Ionic order — but in its more characteristic forms affected in another way all the products of the East. We shall realize that the builders of Nineveh and Babylon were the direct ancestors of those architects who, constructing the great dome churches of the early Christian East, and later on the magnificent cupola of Renaissance Italy, perfected the most sublime form of roofing that the world has ever seen.

M. G. van Rensselaer.

THE ILLUSTRATIONS.

DESIGN SUBMITTED IN THE ROTCH TRAVELLING-SCHOLARSHIP COMPETITION BY MR. T. O'GRADY, BOSTON, MASS.

In consequence of a blunder, the responsibility for which lies between ourselves and the committee in charge of the competition, we never had it in our power to publish the designs which won the prizes in this competition, and only now are enabled to exhibit one of the "rejected addresses." It will serve, however, to show the character and grade of work that future competitors must strive to excel.

SKETCHES OF THE HOUSE OF HENRY HIGGINSON, ESQ., PRIDE'S CROSSING, MASS. MESSRS. STURGIS & BRIGHAM, ARCHITECTS, BOSTON, MASS.

DESIGN FOR THE HOUSE OF MR. —— BOSTON, MASS. MR. J. H. BESARICK, ARCHITECT, BOSTON, MASS.

HOUSE OF C. H. MOORE, ESQ., ST. ANTHONY'S HILL, NEAR MINNEAPOLIS, MINN. MESSRS. DUNNELL & ELLIOT, ARCHITECTS, MINNEAPOLIS, MINN.

THE COLONIAL CAPITAL OF VIRGINIA.

In Thackeray's "*Virginians*," we read that over a century ago Madam Esmond took her place in the family barouche, with liveried footmen mounted behind, and drove in great state from the little village of Richmond to the gay, merry-making metropolis of Williamsburg, some sixty miles to the eastward, where his Excellency the Rt. Hon. John, Earl of Dunmore, then Governor, held his vice-regal court.

One bright morning in the May just gone by, I took the train at the flourishing city of Richmond, now making rapid strides toward her hundred thousand souls, and in something less than two hours alighted in Virginia's colonial capital, no longer the brilliant metropolis, but a picturesque village of fifteen hundred inhabitants. Madam Esmond doubtless made an early start, and dozed comfortably for many hours in the capacious recesses of her lumbering chariot ere it rolled into the busy thoroughfare of the capital known as Duke of Gloucester Street, when the shadows of night had fallen. The liveried footmen stretched their stiffening legs and dozed also, I will venture to affirm. But when the lights of the busy little city glimmered in the distance, her Ladyship straightened herself with dignity, the lackeys up behind grew rigidly statuesque, and the coachman cracking his whip, drove up with a grand flourish before the door of my Lady's town residence.

Here, a century later, when Madam Esmond's chariot wheels have rumbled away, clean out of the world, after two hour's ride in a parlor-car, our train whizzed across the grounds of the colonial palace, once laid out with great taste and elegance, where of yore their Excellencies, the Viceroys of their most sacred Majesties, the sovereigns of Great Britain and Ireland, and Virginia, were wont to take the air, and the brakemen shouted out "Williamsburg!" in that untranslatable guttural peculiar to brakemen, and never intended for the enlightenment of the travelling public. Being of an imaginative turn, I could but picture to myself the consternation of the Right Hon. Norborne Berkeley, Baron de Botetourt, his Majesty's Governor-General of the Colony and Dominion of Virginia, and Vice-Admiral of the same, could he have been called back once more to take the air along the freshly-rolled gravel paths winding through the park which of old surrounded his Gubernatorial palace. Would not his Lordship's periwig have been lifted from his noble head, when that hideous, puffing, screaming monster came dashing along right through the sacred precincts of his own proper domain? I shrewdly suspect that his Majesty's Governor-General of the Colony and Dominion of Virginia would have turned and fled.

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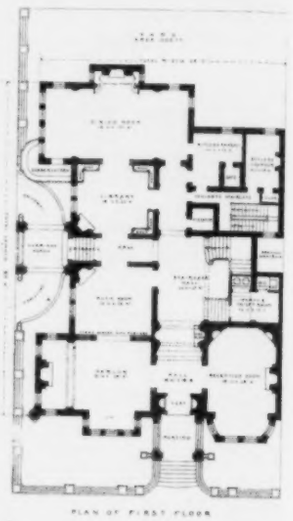
DESIGN FOR MR. ——'S HOUSE.
BOSTON, MASS.

J. H. BESARICK, ARCHT.



PLAN OF FIRST FLOOR

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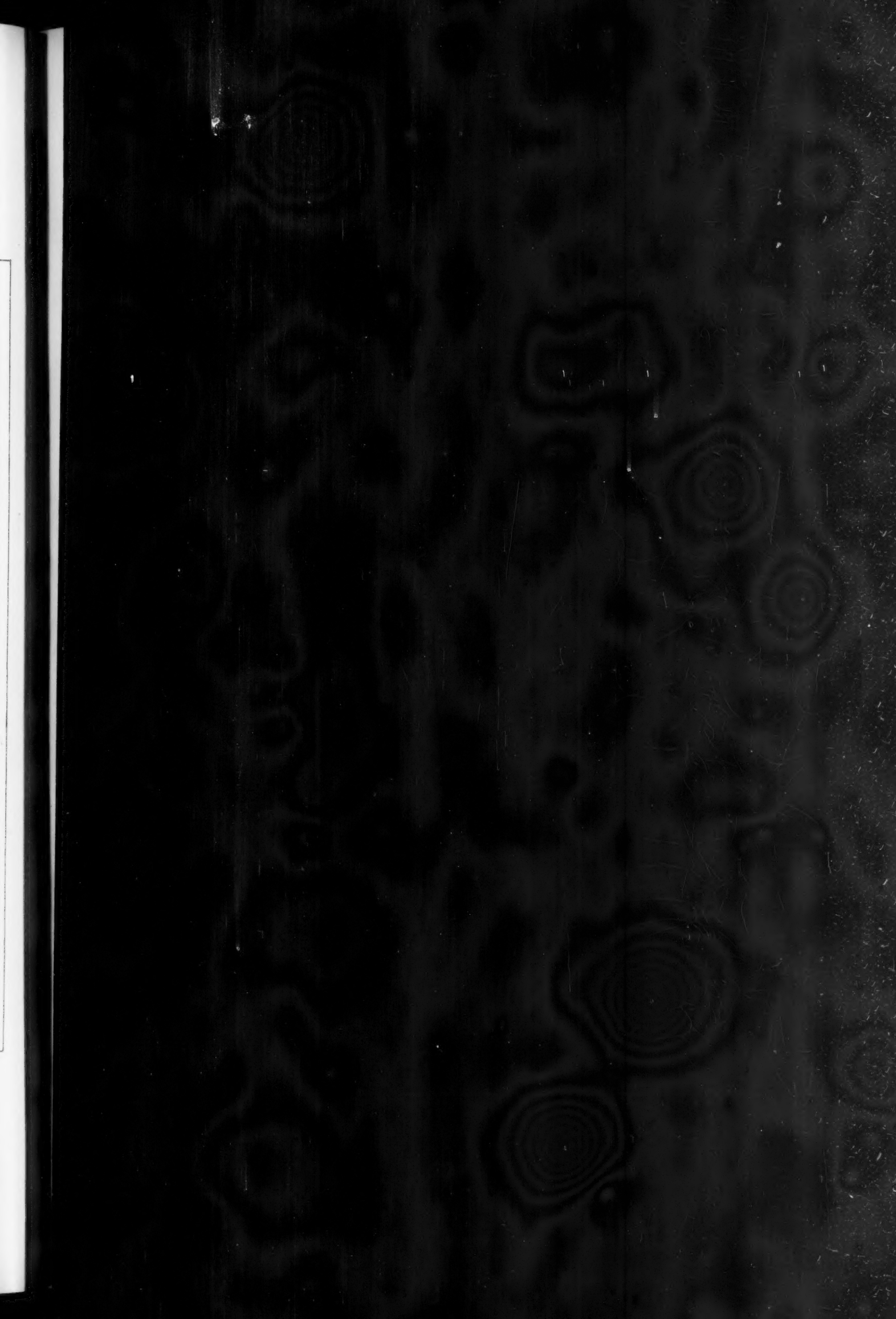

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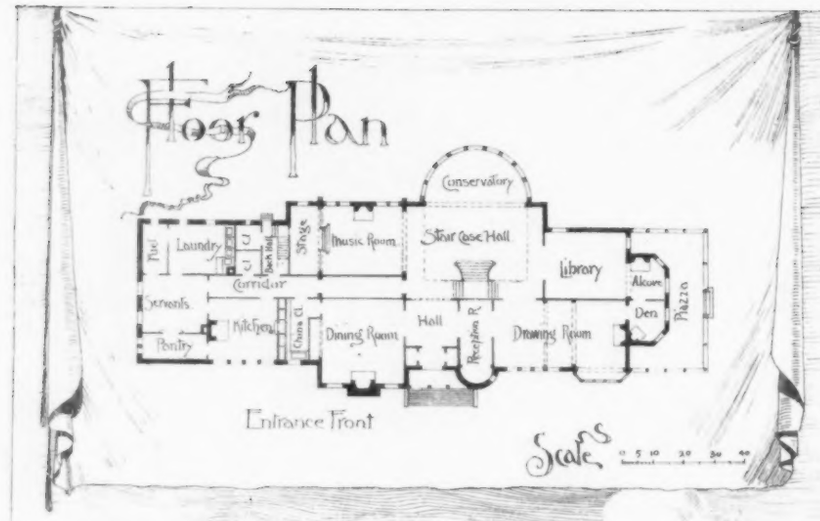
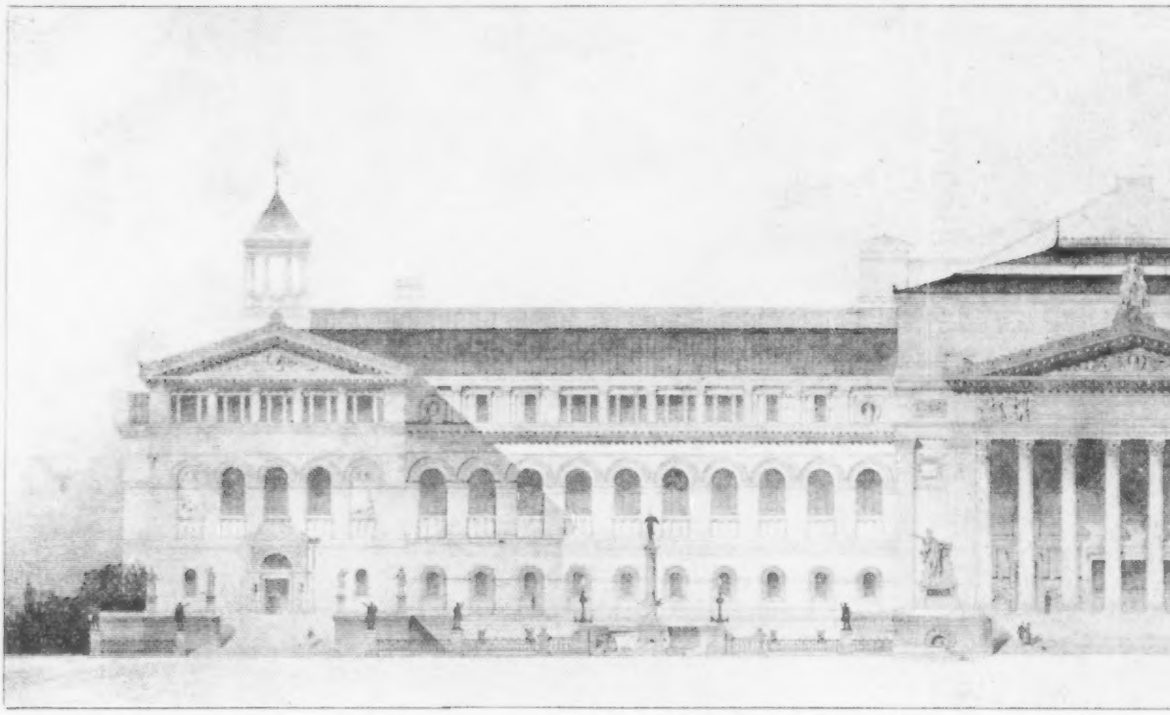


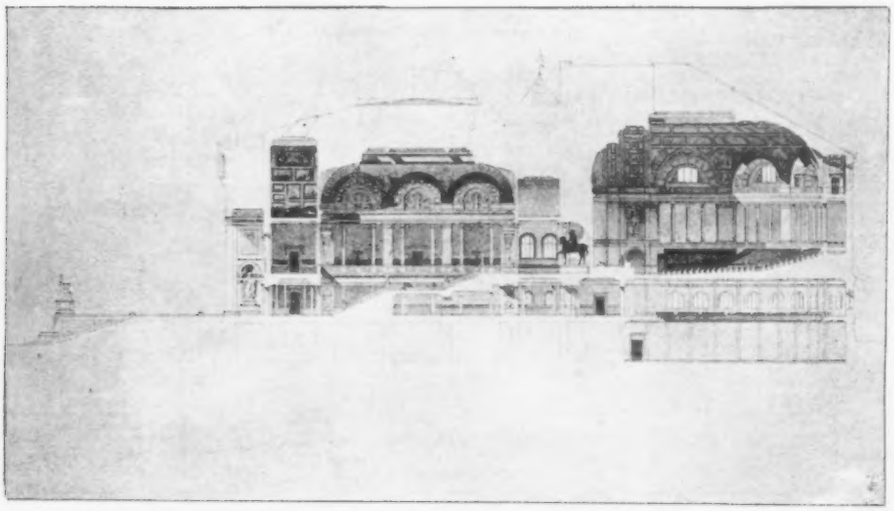
HOUSE ON ST ANTHONY HILL

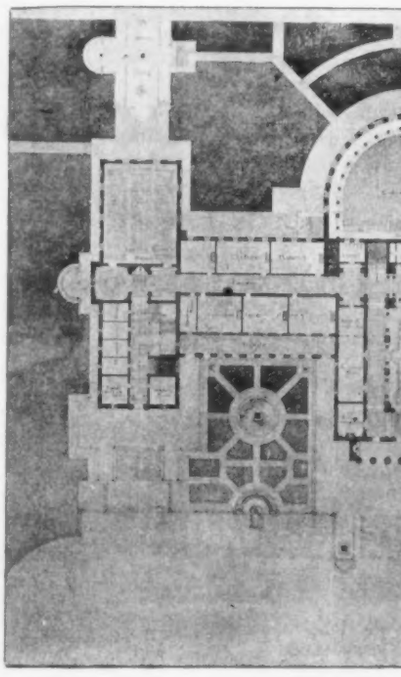
1884 JAMES R. OSGOOD & CO

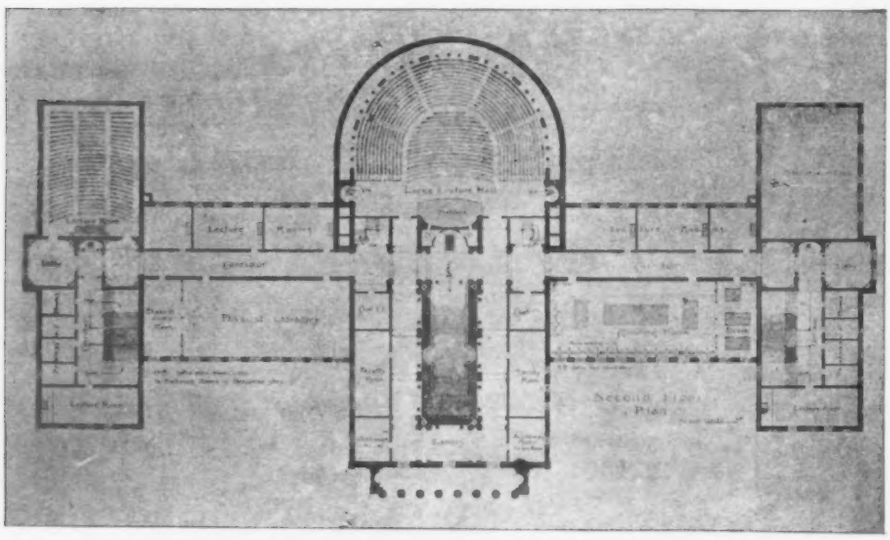
LL. for Charles H. Moore. Esq. Dunnell & Elliot Architects. Minneapolis. Minn.

The Heliotype Printing Co. 211 Tremont St. Boston.









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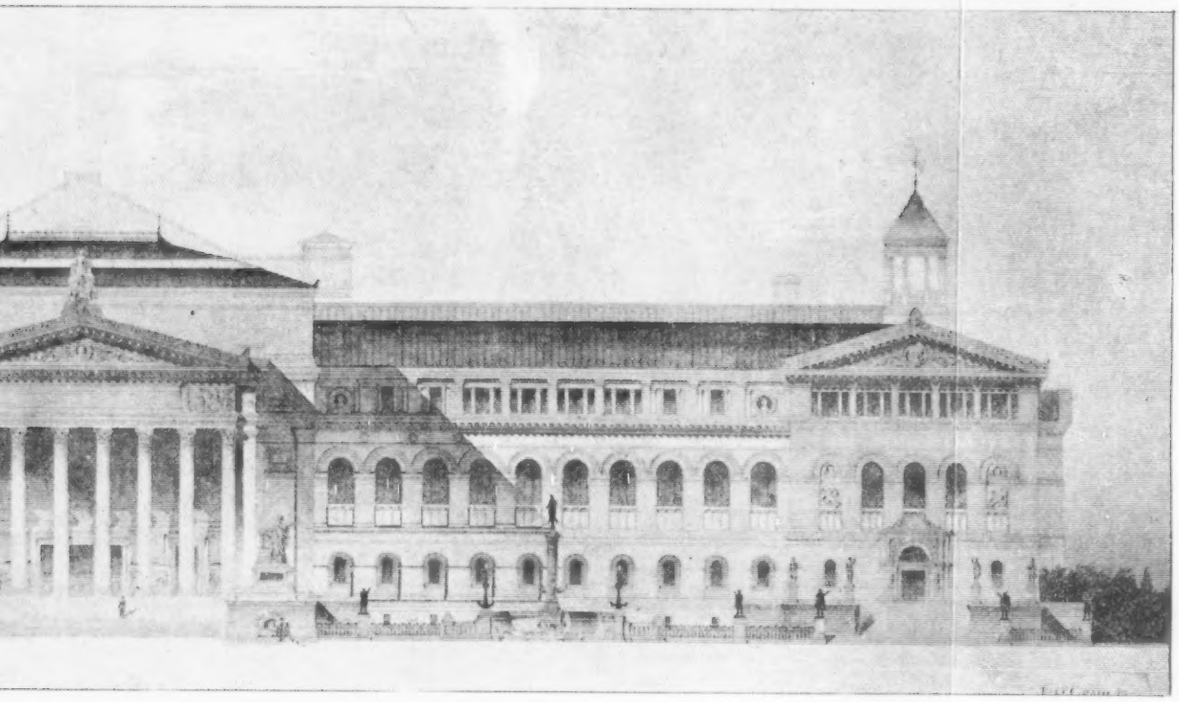

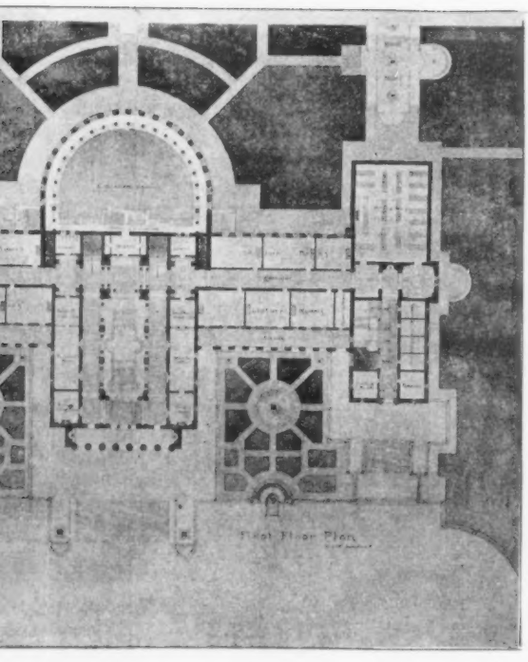

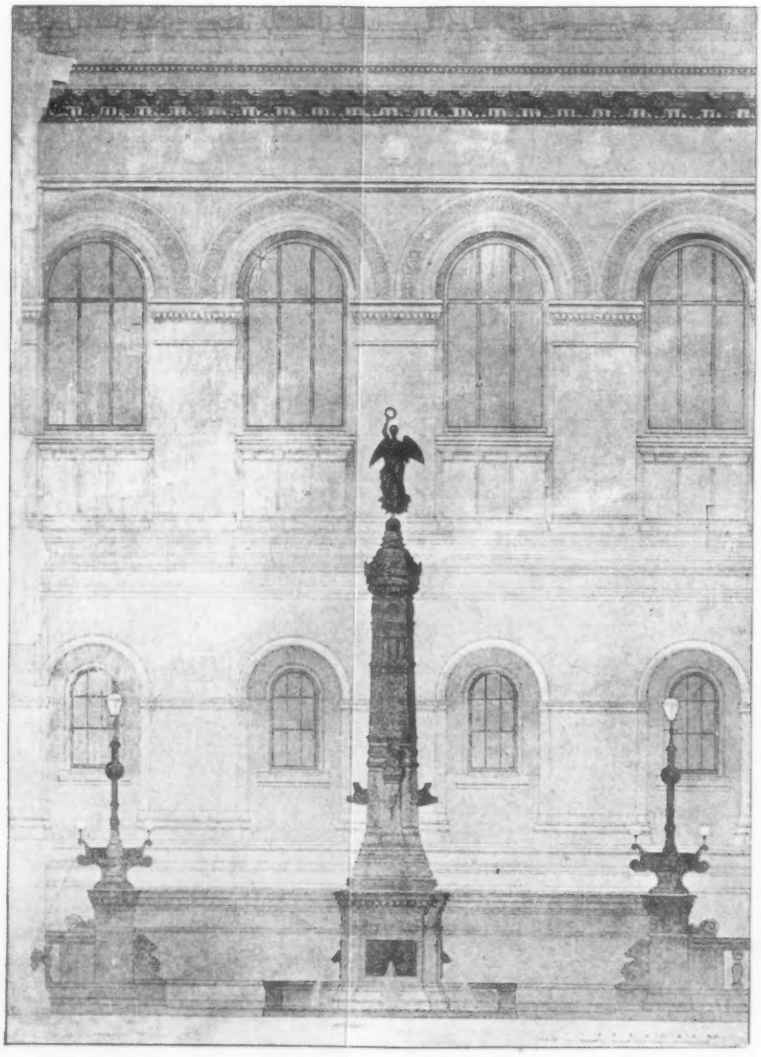

PHOTO CAUSTIC HELIOTYPE PRINTING CO. BOSTON

E ROTCH TRAVELLING SCHOLARSHIP.

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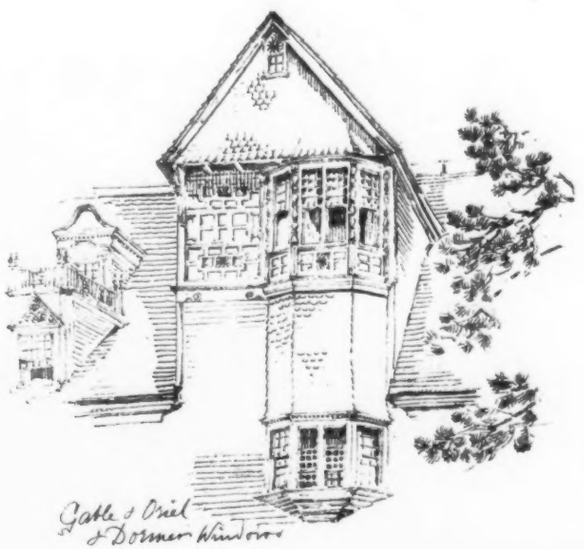
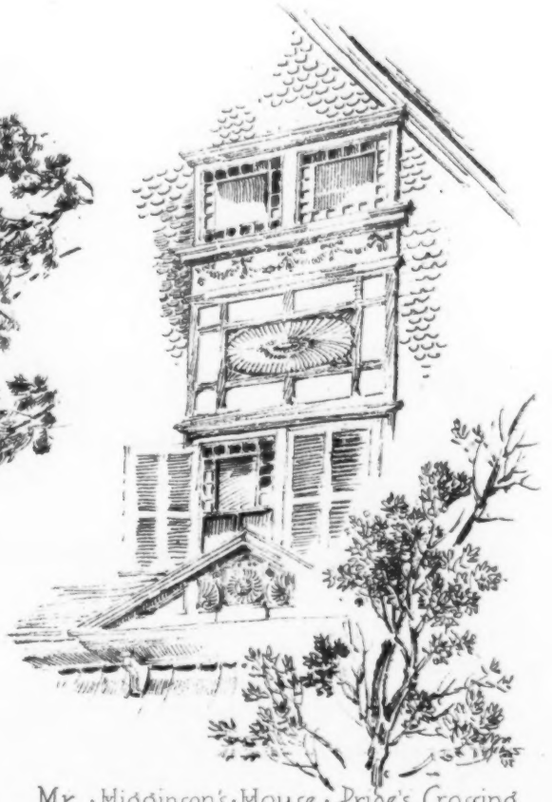
Pencil Sketches in & around Manchester by the Sea: Mass: by E. Eldon Deane.





Mr. Higginson's House Pride's Crossing
Mc Kim Mead & White: Architects.
Sturgis & Brigham:

There are few traces left of the palace in which Virginia's Colonial Governors once dwelt in state. The main building was long ago destroyed by fire, after Patrick Henry had lived there as the first Governor of the Commonwealth, and the seat of government had been removed to the "town of Richmond." The two wings left standing — one used for offices, the other occupied by the Rangers, his Excellency's body-guard — became private residences until the late war, when they were destroyed by Federal troops. Portions of the foundations are still visible, and upon the site of the palace proper now stands a grammar school, endowed by one Mrs. Mary Whaley, a worthy citizen of this place, who died some one hundred and fifty years ago. A granite slab set in the wall above the porch commemorates this fact. It also states that the building is "the Grammar and *Matty* School of the College of William and Mary," also situated at this place. But why "Matty?" Possibly in honor of Dame Mary, its founder.

In the palace grounds, or rather what were formerly the palace grounds, is a large earthern mound. Trees have grown upon it, and the bamboo-briar and Virginia creeper, run riot there, while the Chesapeake and Ohio Railway curves around its base. In the side away from the railway is a cavernous opening, down which one peers suspiciously. The shaft is circular, walled up with brick, and is some seventy-five feet in depth. This place is familiarly known as Lord Dunmore's ice-house. An enthusiastic young lady of my acquaintance declares it as her belief that it never was an ice-house, but was connected with the palace by a subterranean passage, and that they put refractory Indians there.

The palace fronted upon a long, narrow common, known as Palace Green, stretching from the palace gates to the Duke of Gloucester Street. Down the centre of this green ran an avenue of catalpa trees, along which Lord Botetourt drove in his coach of state, drawn by six milk-white horses, the gift of his royal master, King George III, while on either side are situated at wide intervals, stately old mansion-houses. In one of these, a massive two-storied brick structure, General Washington had his headquarters for a few days before the siege of Yorktown. It was the home of Chancellor Wythe, one of the signers of the Declaration of Independence, and in one of its rooms he died from poison administered by the hand of his nephew. His ghost is said to haunt the establishment on the anniversary of his death, the only portion of the spectre visible being an ice-cold hand, which is passed over the face of the person who chances to occupy the apartment in which the murder was committed. There is another spectral inhabitant of this mansion — a stately dame in powdered locks and crimson brocade, whose high-heeled slippers go tapping along the corridors and broad stairway at the dead hour of night; yet the cheery little lady, its present mistress, really seems quite contented, and not at all afraid of ghosts. This is not the only house in the quaint old town enjoying the reputation of being haunted, but the spectres of greatest renown are these two who dwell in the stately pile where Chancellor Wythe was poisoned, and General Washington had his headquarters.

At the corner of Palace Green and Duke of Gloucester Street stands Christ Church, massive and cruciform. This venerable structure was completed as it now stands in 1682, though a portion of it was erected so soon as 1642. It was the court church, and the spot is now pointed out where Sir Alexander Spottswood, the founder of the Order of Knights of the Golden Horseshoe, and the first to lead an expedition across the Blue Ridge Mountains, had his pew covered with a crimson canopy when he was Governor of the Colony in 1710, and the gallery occupied by Earl Dunmore, the last of the Colonial Governors, and his family, the Countess of Dunmore, Viscount Fincastle, heir to the earldom, the Hons. Alexander and John Murray, and the ladies Catharine, Augusta, and Susan Murray.

The interior of the church has been greatly altered, a pitiable mistake in my opinion. The square, high-backed pews have given place to those of a more modern pattern; the goblet-shaped pulpit, with its spiral stairway, has been taken down from its perch on the corner of the wall; the flag-stone pavement of the aisles has been removed, and a wooden flooring substituted in its stead. Lamentable changes! But the tombs of those who went to dust beneath the sacred edifice near two centuries ago may still be seen along the aisles, and in the walls are imbedded marble tablets — one dating so far back as 1672 — erected to the memory of persons of note in the colony. There are three rose-windows in the north and south transepts and above the choir-loft, the latter being almost entirely concealed by ivy, indeed, the east end of the church is enveloped in ivy, the body of which has grown to the size of a small tree.

In the belfry is the early tomb of Colonel John Page, who died in 1691–2. He gave the land for the church and grave-yard. He is buried outside, his resting-place being marked by a handsome marble shaft erected by his descendant, Dr. R. C. M. Page, of New York, who also collected the fragments of the original monument, and placed them in the belfry.

I climbed the dark and winding stair to the very top of the spire where the bell is hung. An inscription on the bell states that it was "the gift of James Tappley to Burton Parish, 1760." Owing to its peculiarly silvery tone, a tradition runs that when it was being founded in London, an old lady threw a lapful of silver coins into the seething metal.

There are three communion services of great historical interest belonging to the church. The oldest of these consists of a huge silver chalice and paten, and was brought from Jamestown when the church there was destroyed. Both pieces bear the inscription, "Mixe not Holy Things with Profane;" and on the bottom is another inscription in Latin, which shows that the service was presented in 1661, by Francis Morrison, who acted as Governor on one occasion when Sir William Berkeley was absent in England. The second service was the gift of Queen Anne, and is of solid gold beautifully wrought, consisting of a chalice and paten. The third service, which is of silver and consists of three pieces — flagon, chalice, and paten — was the gift of George III, and bears the royal coat of arms and monogram. The last two services are still regularly used.

Outside in the church-yard, which is surrounded by a brick wall with large iron gates, moulders the dust of generations from the middle of the seventeenth century to the last quarter of the nineteenth. I wandered in and out beneath the tall locust trees, among the *Hic Jacets* and *In Memoriams* for many hours. Massive marble tombs splendidly emblazoned with armorial bearings, "the boast of heraldry, the pomp of power," tell where my lord and lady sleep, the grandees of the cavalier Colony of Virginia. Time and weather have done their work here. The eulogistic inscriptions are worn indistinct, the carved cherubim and death's-heads are covered with lichens and moss; the marbles, in many instances, are broken into fragments. Under yonder great marble sepulchre, with its coat-of-arms, its grinning skulls, its smiling angels "rest ye ashes of His Excellency Edward Nott, late Governor of this colony, who departed this Life the 23d Day of August, 1706, aged forty-nine years." Here beneath this slab reposes Sir Thomas Lunsford, Kt. In that unmarked grave over there among the buttercups and grasses lies Lady Christina Stuart, whose descendants became the earls of Traquair. That splendid pyramid of marble, with its Latin inscription and heraldic display, was erected a hundred and fifty-one years ago above a woman, whose race is extinct, and whom the world has forgotten. *Sic transit gloria mundi.*

But all is not pomp and pride here. There is a moss-eaten slab which tells of a woman who "after a Pilgrimage of Forty-three yeare in a troublesome world, Laye Down here to Rest in hope of a joyful resurrection. Obij June 6, 1695." Upon another handsome tomb, now sadly mutilated, we read that the woman beneath "blest her Husband with a sonn and a daughter, and departed this life the 12th day of November, Anno Dom. 1702, and in the 20th yeare of her age." Poor little girl, wife and mother, hid away here for near two centuries beneath this massive tomb, emblazoned with the family crest and arms!

I stumbled upon one of those queer chest-shaped tombs, which bore the name of James Whaley, husband of one Mary Whaley, the same I imagine, who endowed the "Grammar and Matty School." Upon the panel supporting the foot of the slab is carved, in all the emphasis of capitals and italics, the following couplet: —

"MATTHEW WHALEY lyes Interred *here*
Within this Tomb upon his FATHER *dear.*"

The grave-yard muse does not seemed to have flourished in the Colony and Dominion of Virginia, though in this old church-yard there are two or three rather florid specimens of the poetical epitaph dating in the latter part of the seventeenth century. The following is taken from the monument erected to the memory of Mrs. Mary Page, who died in 1690–91: —

"Thy modest meek and Pious Soul Did Shine
With well Tempered Nature and Grace Divine
One to excell in beauty few Could Finde
Yet thy Rarest Features were of the Minde
Thou wast a Faithfull and Vertious wife
Thou greatly loved peace and hated Strife
Thou wast a prudent and tender Mother
A true loving sister to Each Brother
A Choice Friend a Kind Neighbour to all
A Good Christian Ready at God's Call
Thou livd and dyd upon Christ Relying
Thou dyd to Sin and now live by Dying
Thy Faith Doth yield, Thy Piety Doth Give
Restoratives to make thee Ever Live
Thrice blest Friend, this Epitaph is thy due
When Saints arise thy Lord will say its true."

It is difficult to reconcile the paucity of punctuation marks and the prodigality of capitals; but it is comforting to know that the worthy lady commemorated "greatly loved peace and hated Strife," even though strife is honored with a capital letter while peace is not.

Among the modern monuments are handsome marble shafts to the memory of Dr. John Millingham and Judge Beverly Tucker, the author of "*The Partisan Leader*," and other novels, and half-brother to Randolph, of Roanoke.

It was difficult for me to tear myself away from this peaceful city of the dead of so many generations. The locust trees in their fresh May green were heavy with fragrant bunches of white blossoms; the long grass was studded with thousands of buttercups and purple violets; birds fluttered and sang in all the joyousness of spring among the tree-tops, through which

"The gray church tower with its glittering cross
Points up to the throne of God."

Sleep on, in the shadow of those ivy-mantled walls, Sir Knight, My Lady Christine, your Excellency, you gentle dame, who "greatly loved peace and hated Strife;" the battle is done and rest is come. — *Correspondence of the Evening Post.*

CHEAP HAND-BOOKS OF ART.

THE Librairie de l'Art has proved itself a public benefactor, by issuing a cheap, popular edition of these works[1]; for as now given to the public at the ridiculously small price of 75 centimes (15 cents) a volume, it is within everybody's power to possess a first-rate work upon art at a nominal price. At present, only seven volumes are ready; but when complete, the collection will consist of about forty. The little volumes are full of wood-cuts; the type is good, and the letter-press concise and to the point; and now that so many persons discourse upon art matters without knowing much about them, and lacking a similar work in their own language, they cannot do better than invest in M. Ménard's volumes.

The work is divided into three series. The first is purely technical, consisting of arithmetic, geometry, perspective, building, stone-cutting, carpentry, architecture, anatomy, and the principles of decorative composition. The second series comprises paper-hangings and fans, textile fabrics, tapestry, glass and rock-crystal, enamels, ornamentation of books, ivories, furniture, iron-work, arms and armor, silver and goldsmith's works, and jewelry. The third series treats of the history of costume, French sculpture and architecture, walks about the Louvre and Cluny Museums, and decoration in Egypt, Greece, Rome, the Middle Ages, the Renaissance, and the seventeenth, eighteenth, and nineteenth centuries.

By this list it will be seen how thorough is the treatment of the subject, making the book as useful to the mere amateur as to art students and workmen. Each volume, moreover, is divided into sections in the same manner, thus: 1. Decoration as applied to architecture; 2. Decoration as applied to furniture and common objects; 3. Decoration as applied to the person or to costume. This is a much better system than that of treating of the architecture of several centuries under one head, and the furniture under another; for the reader gets a precise idea of the entire decoration, whether of building, furniture, or costume, during a particular period. Thus, whether we open the volume on Egypt, or that on the eighteenth century, we find first an account of the buildings; secondly, an account of furniture, enamels, glass, iron-work, etc., and thirdly, an account of the costumes worn, the manner of dressing the hair, etc. The book proves once more the fact that there are no people who so well understand organization as the French, be it in their museums or in their literature. Perhaps the only fault we can find with the book, is the form of question and answer in which it is written; better would it have been to put the question as a marginal note.

In the volume on the sixteenth century (the Renaissance, or *style Henri II*), M. Ménard gives account of the work of Vignola and Serlio, the author of the treatise upon architecture, and of much of the work in the Louvre, and the Palace of Fontainebleau; of Pierre Lescot and Philibert Delorme, both of whom worked upon the Louvre. Delorme also built a great part of the Tuileries, and the charming Château d'Anet, which was erected for Diane de Poitiers, a fragment of which may now be seen in the court-yard of the Ecole des Beaux-Arts in Paris. Then we have an account of the works of Jean Goujon, some of which may still be seen in Paris, at the Hôtel Carnavalet in the Rue Rambuteau, the former residence of Madame de Sevigné, and now a museum; and also in the Louvre, one side of which is said to have been entirely his work.

But it is on the Loire that the richness of this period of French architecture may be studied. The Château of Blois is a magnificent example. Nancy and Orléans, Sens, and Toulouse, are also towns full of Renaissance architecture. From châteaux, M. Ménard invites us to the study of tombs, Ligier Richier being one of the principal sculptors of this period for such work; Goujon confining himself to secular work, such as fountains (fragments of the Fontaine des Innocents yet remain in the Louvre), mantelpieces and wall decorations of a semi-classical style. One of the finest works of Richier is the tomb of René de Châlons, Prince d'Orange, in the Church of Bar-le-Duc. It shows the curious taste of the day in being a representation of the defunct *after* death. The prince wished this, and his widow so rigorously carried out his views, that the monument represents him, not as a skeleton, but in the actual state of decaying, the flesh hanging from the body, and all other hideous details of putrefaction; but at the same time offering to God his heart which he holds in his hands. So realistic is it that it makes the spectator shudder. Richier's style is rather that of the Middle Ages than purely Renaissance, although one sees in it the transition of the former into the latter. Another fine tomb attributed to Richier is that of René de Beauvais, in the museum at Nancy. Michel Colomb is well represented by the mausoleum in Nantes Cathedral, erected to the memory of François II, Duke of Bretagne and his wife Marguerite de Foix. Succeeding these sculptors were Germain Pilon and Jean Cousin; both of whose work may be studied in the Louvre, in the tombs of Birague and his wife, and of Admiral Chabot. The beautiful marble group of the Three Graces in the same museum is by Pilon. Goujon's Nymphe de la Seine (also in the Louvre), is a beautiful bas-relief of a woman, elegant in form, though somewhat too elongated for classical tastes.

While glass-painting sensibly declined during this century, it saw the birth of various kinds of faïence, Palissy, and that called Henri II, or d'Oiron ware (without much authority, for it is exceedingly doubtful if it was made there.)

Architecture declined during the seventeenth century: the religious wars had destroyed the Renaissance buildings in a great degree, and the restorations were more or less wanting in elegance. Slate roofs replaced tiled ones, and grandeur was preferred to grace in the constructions. Still there is a certain character of their own in the buildings of this period, a very good specimen of which is the Luxembourg Palace in Paris, which was built for Marie de Medici.

During the regency of Anne d'Autriche, the dome appears in French architecture. The erection of the hospital of Val de Grace was due to a vow made by the queen (who was twenty-two years childless), upon the birth of Louis XIV. The architect was François Mansart, but it was completed by Lemercier; Leduc terminating the dome. That of the Invalides was also the work of Mansart, and that of the Sorbonne was by Lemercier; of these and others in Paris, the Invalides is the most beautiful in form. The Italian, Bernini, played an important part in the art history of this period. He managed by flattery to gain the patronage of the king (Louis XIV) but in spite of intrigues his design for the east end of the Louvre was rejected in favor of that by Claude Perrault, which was preferred by Colbert. The justice of the minister's judgment is shown by comparing the present magnificent colonnade facing the Church of St. Germain l'Auxerrois with an extant medal representing Bernini's project. The palaces of Versailles and Marly were the work of Mansart and Le Brun. Marly had a central pavilion, surrounded by twelve others, which was called the signs of the Zodiac. Louis XIV having taken the sun as his attribute, it was but natural that the courtiers should name themselves the signs of the Zodiac, as their pavilions surrounded the King's. This is a fair example of the sort of conceit to which the people gave way in those times.

Le Brun was the great decorator of this century, Versailles containing many examples of his talent. Perhaps the best example of decorative work of this period is the Salle d'Apollon of the Louvre by Bérain. It is rich in design, and though a mass of gold, not overloaded.

M. Ménard gives an account of the change in furniture decoration, that of the Renaissance being sculptured and rarely gilt; that of the seventeenth century being ornamented with ormolu mouldings and boule, while later on, in the eighteenth century, the taste for painting the wood came in. Much of the furniture, so-called Marie Antoinette's, is still to be seen in Paris, at Versailles, and at the South Kensington Museum, London. It is of extreme elegance of design, decorated with branches or wreaths of flowers upon gold or white grounds, and sometimes with medallions, painted by Boucher, or plaques of Sèvres, porcelain or Wedgwood ware.

M. Ménard gives examples of Sèvres and Dresden china, of Limoges enamel, and iron-work, of which that of Jean Lamour is the most celebrated.

M. Ménard quotes some interesting accounts of Lamour's processes from his own writings.

In the volume on *l'orfèvrerie*, the author gives us notices of goldsmiths work among the Egyptians, Greeks, and Romans, in ancient Asia, and in modern Italy, Spain, Germany, Flanders, and England. This volume has numerous illustrations of chalices, reliquaries, and secular plate. In the volume on Egypt, M. Ménard explains the meaning of the various attributes given to their statues; the sphinx, the ostrich feather, the vulture, the solar disc, the lotus flower, and the scarabæus. This is most useful, as few people are acquainted with the subject, and yet without such knowledge it is difficult to understand the art of ancient Egypt.

In conclusion we can only say that we hope the remaining volumes will soon appear.

S. Beale.

[1] *Bibliothèque Populaire des Ecoles de Dessin. Publiée sous la direction de M. René Ménard, Professeur à l'Ecole Nationale des Arts Décoratifs, Paris, Librairie de l'Art, 33 Avenue de l'Opéra. Prix, 75 centimes.*

THE SALT MINES OF NORTHWICH, ENG.

THE property of this firm comprises several independent works in Cheshire, which are situated respectively at Winsforn, Over, Moulton, Middlewich, Northwich, Marston, and Wincham. All these are white salt works, there being also rock-salt works at Northwich and Marston. They form in the aggregate by far the largest salt works in this district, which is equivalent to saying they are the largest in the world; the annual production is close upon a quarter of a million tons of salt per annum.

The Adelaide Works, at Marston, are those which it was proposed that the members of the Iron and Steel Institute should visit; but as we have lately had an opportunity of inspecting the other works of Messrs. Verdin, we shall not altogether confine ourselves to those on the programme. It

was proposed that the first part of the forthcoming visit should be devoted to the rock-salt mine at Marston. This is one hundred and ten yards deep, and has two shafts sunk within a few feet of each other. The first twenty yards of the shaft are five feet square, and are lined with a double casing of timber, with puddled clay between. Below this, for a farther distance of forty yards, there are cast-iron cylinders, three feet six inches in diameter, which carry the shaft to a bed of rock that lies between two strata of rock-salt. The upper bed has not been excavated, the quality not being considered good enough. The rock is thirteen yards thick, and is bored to the same size as the iron cylinders. The lower part of the shaft consists of twenty-three yards of rock-salt. Especial precautions have to be taken in order to prevent water getting to the shaft, and at the back of the tubing, otherwise the rock-salt would speedily dissolve, and the shaft would fall in.

The opening to the mine is bell-shaped, and the underground workings are very extensive, the rock-salt being excavated to a height of twenty-six feet. The air is unusually pure for a mine, being, in fact, to all appearance as good as that on the surface; this is to be accounted for by the loftiness of the workings. The exhaust air from the engines used in cutting the rock-salt assists the ventilation, but we understand there are no other means of creating an artificial circulation.

The area already excavated is about eleven acres, and the roof of this large surface is supported by pillars of rock-salt of exceptionally massive proportions, being ten yards square, in place of the ordinary eight yards; they are placed twenty-three yards apart. This is a wise provision, and no doubt some of the extraordinary subsidence to be seen in the neighborhood would not have occurred if better supports had been left in old times. . . .

The cutting-machines are of much the same type as those used in coal mines, the cutting-wheel, which works horizontally, being of steel. The operation of getting out the rock-salt commences at the top, the upper part, which is the most troublesome, being got out by the air-engine and by hand, and also by blast with powder; this is for a depth of six feet. The remaining and lower part is blasted down as required, and as orders for the particular description of rock-salt of which it is composed are received. The shot-holes are made by hand, and a straw filled with powder is used as a fuse. There is practically no danger in this work, as the salt does not fly, and there is no fire-damp in the mine. A series of tramways are laid down, on which run small trucks carrying loose tubs, which are taken up the shaft. The hauling is done by ponies.

The illumination of the mine is by candles, both gas, the electric-light, and paraffin lamps having been tried, but on the whole, candles are found to be the most convenient. The mines when illuminated have a very pretty appearance, and as seen from the pit-eye, or from the elevated parts, bear a strong resemblance to a city at night.

The rock-salt is sometimes sent away in the lump, just as it is brought from the mine, a great quantity in this state being shipped to Australia, America, Russia and other countries as cattle salt. For other purposes, such as those of copper works and alkali works, or agricultural purposes, it has to be crushed and ground. This is done at the pit mouth, where there is a mill of special construction, not unlike a large bone-mill, and which is driven by a powerful pair of horizontal engines. There are first two sets of toothed rollers, which break the large lumps up into smaller pieces, and below these are smooth horizontal rollers. The powdered salt is then taken by a small bucket-ladder, and is either passed over blanks or else screens of the degree of fineness required. A good deal of rock-salt is used for making salt-cake by the Hargreaves process, to which purpose only the finest quality can be applied. . . .

At the Marston Works there are also brine springs close to the mine. This is a combination seldom met with, as where there is brine it is difficult to gain the rock-salt. . . .

The manufacture of salt from brine is the simplest thing possible, and is said to be conducted to-day on the same principle as in the days of the Romans. Numberless patents have been taken out for schemes which have been suggested, but in the end they have nearly all been abandoned. Almost the only exception is the process by which patent butter-salt is made. The plant in this case consists of circular covered pans fired from below, into which the brine is constantly fed. The salt as it forms is drawn to pockets in the sides by means of revolving rakes worked by a central vertical shaft. The waste gases from the furnace are conveyed in flues to beneath other pans of the ordinary open kind. The steam given off in the closed vessel is also used for a similar purpose. This system has been in operation at Messrs. Verdin's works at Winsford for some time, on a somewhat extended scale. Although there is a theoretical saving in heat, the test of actual practice shows that it is more costly to produce salt in this way than on the old simple principle, and the patent pans will probably be dismantled at an early opportunity.

It may be mentioned that the different grades of salt very largely depend on the temperature at which they are produced, and in this way the product is often divided into "boiled" and "unboiled" salt, the former being produced by boiling the brine, and the latter when the evaporation is carried on at a lower temperature; it is no doubt needless to remind our readers that the stronger the brine the higher its boiling point. The brine also requires to be agitated during the process of evaporation. This is always done, excepting in the special case above referred to, by hand, the operator using a large rake with which he draws the salt as it collects to the sides. Attention must be paid to keeping it away from the part over the furnace, otherwise the plates would speedily become burnt through, and care is required in moving hard scale as it forms on the bottom of the pans. The pans used are large rectangular vessels made of iron plating. Those at the Adelaide Works are sixty-six feet long and about two feet deep, but it is said that some of the new pans in this district are one hundred and forty feet long and thirty feet wide. As there is but one furnace to the pans, and that is only four feet or five feet long, it will be easily seen that there is considerable difficulty in keeping a large pan full of brine at a high temperature, and therefore the smaller pans produce the better qualities of salt. In old times leaden pans were used. There is one to be seen at Northwich which is two feet three inches square.

This brine, which is drawn from the springs by pumping-engines of ordinary type, is fed constantly into the pans, and the salt as it forms is, as we have stated, drawn to the side. Here it is filled into small square moulds, known as tubs, which form it into the rectangular lumps, weighing about fourteen pounds each, and which are so familiar in domestic life. Some of the brine springs are more valuable than others, according to the quantity of salt held in solution. At Messrs. Verdin's Winsford Works, the full saturation is about twenty-seven degrees; from this two pounds ten ounces per gallon is obtained. Extensive stores are required for drying the lumps, and packing-floors for putting the produce into sacks for shipment.

To make the finest table salt, the lumps are ground in a mill, and the product is then passed over screens in order to exclude any chance impurity. Afterwards it is put through centrifugal machines which work at a very high velocity, making several thousand revolutions per minute, and it is then carefully packed in bags or jars, marked or labelled as necessary for exportation. A large quantity of the very finest salt is exported to America, the citizens of the United States being choice, even to fastidiousness, in the quality of the article they consume.

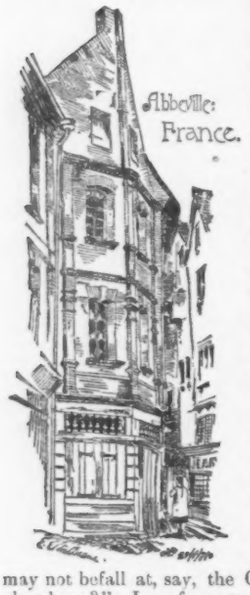
In the neighborhood of the Newbridge Works, at Winsford, Messrs. Verdin, who are the owners of most of the adjacent property, have built a model village, the greater part of the inhabitants of which are employed on the works. Substantial brick-built, six-roomed cottages, with excellent domestic conveniences, are let at the rate of 3 *s.* 6 *d.* per week, including rates and taxes. Four-roomed cottages are 2 *s.* 6 *d.*, and some smaller ones even cheaper. There are also here an institute, with a billiard-room containing two tables, a fine lecture-room capable of holding several hundred people, and a library and reading-room. This has not long been opened, and must in time lead to very beneficial results. A nominal subscription to the employés is charged which is sufficient to keep the place in order; the whole of the buildings and equipment having been presented by Messrs. Verdin. . . .

Any account of the salt industry of this district would be incomplete unless some reference were made to the remarkable instances of subsidence of the land, evidences of which are to be seen on every side in the Northwich district. The River Weaver, which is the highway for all the water-borne salt, is constantly sinking, and unless Northwich Bridge had been bodily raised at times, there would probably be hardly room for a rowing-boat to pass under it now. At various parts of the course of the river, one meets with large meres, locally known as "flashes." One of these, at Wilton, is, we are told, about eighty acres in extent, and in parts sixty feet deep. These flashes are caused by the sinking of land, where only a few years ago there was high ground twenty feet or thirty feet above the level of many of these pools. In one part, not far from the mine we have described, there is an irregular-shaped basin in the high ground, of two or three acres in extent. The bottom of this is partly covered with water, said to be thirty feet deep, and the surface of which is twenty feet to thirty feet below the surrounding level. In one part of this basin there is to be seen about two hundred yards of a railway bank, this length having dropped from the remainder of the track, which lies twenty feet or thirty feet above it. In the town of Northwich itself there are very few buildings the outlines of which are square. Walls lean all ways, and the brickwork shows lines of most devious courses. Windows originally rectangular become what may be described as lozenge-shaped, and the floors of rooms abound in picturesque undulations. Some of the houses are iron-bound, so that the brickwork may hold together; one in particular, which we noticed, was in a perfect cage-work of iron. It is part of the regular experience of a Northwich landlord to have to "jack up" his property every few years, and in order to facilitate this, the walls are generally placed on heavy balks of timber, so that the whole may be comfortably lifted together. Unless these precautions are taken, the house will gradually sink into the earth, and we are informed that at the present time there is one dwelling in which the original first floor is now on a level with the ground, and the front door has been cut through the brickwork in order that entrance may be made from the street into the first floor direct.

At Winsford, close by, there are also remarkable evidences of earth-sinking, and the houses have gone down so that rooms which were once bedrooms are now shops on a level with the street. The town-hall has been raised eight feet since it was built, a year or two ago. The church has been raised seven times, and the market-hall, which was originally entered by a flight of steps, has disappeared altogether. It is a delicate thing to discuss the reason for all this in the Northwich district, where party feeling runs very high on the question of subsidence. The landlords somewhat naturally object to

maintain this continual struggle to keep their property above ground, and a short time ago attempted to bring in a bill by which a tax on the salt should be levied, the proceeds to be applied to maintain the buildings on the surface. Although no one, we believe, altogether denies that the abstraction of salt causes the settlement in question, yet the salt-owners managed to make out so good a case that a committee of the House of Commons came to the conclusion that the preamble of the bill was not proved. It is argued on the side of the salt-owners that the brine springs are natural water-courses, and that the water is taken in at higher ground, so that it would in any case come to the surface, even if not pumped, and it is by brine-pumping that by far the greater part of the salt is now obtained. That being the case, the salt people say it can make no difference to the subsidence question, whether the salt is extracted artificially from the brine, or whether it is allowed to find its way into the rivers and water-courses or to the sea direct. However this may be, the salt-owners claim that as a matter of law they have a right to any water found on their land, and there is no law by which they are compelled to consider where any substances held in solution may or may not be taken up. The interests of both landlords and salt-owners are identical to a certain extent. The salt trade is the staple of the district, 1,600,000 tons of white salt and 166,740 tons of rock-salt being produced in Cheshire during the year 1881. If any tax were placed on the commodity which would unduly handicap this business, so as to drive it to other quarters, the landlords' property would be of little more value than the salt-owners' workings.—*Engineering.*

A LIGHTNING-STROKE AT CHICHESTER, ENG.



IN a very large majority of the cases in which accidents have occurred to buildings which have been furnished with lightning-conductors, the mischief has been actually traced by competent inquiry to some easily recognized fault or deficiency of construction. A very instructive illustration of the accuracy of this remark has quite recently presented itself in a form which is worthy of notice. Shortly after midnight, on the 26th of November, during a thunder-storm of some severity, a flash of lightning struck the lightning-conductor attached to the spire of Chichester Cathedral, and scattered a considerable portion of it into fragments. A letter from "A Fellow of the Royal Astronomical Society" forthwith appeared in the *English Mechanic and World of Science*, drawing attention to the accident, and commenting upon it in the following words: "This seems to open a very serious question indeed, because, if so elaborate an affair as the Chichester conductor proved so much worse than useless when a thunder-storm came, what security have we that a similar disaster may not befall at, say, the Government magazines at Purfleet and elsewhere?" In reference to the accident which called forth this note of alarm, it may be at once, however, said that it belonged essentially to the class of occurrences which have been pointed at in the beginning of this paragraph. The conductor which was attached to the spire was not adequate and competent for the protective work which it was intended to perform. It had been put up sixteen years ago, when a new spire was erected in the place of the old one, which fell in consequence of having been added as an after-thought to a tower that had not been prepared to bear its weight, and was of a form which is, happily, now obsolete. It originally consisted of twelve No. 15 gauge[1] copper wires arranged in a double series, side by side, and held together by a double strand of zinc and copper wire crossing them transversely, and acting as a kind of weft to the longitudinal copper warp. The conductor was thus a sort of ribbon of copper wire, with transverse binding-threads of zinc. The weight of the metal in this compound conductor was ten and a quarter ounces per yard, instead of being thirty-six ounces per yard, as it ought to have been at the very least, if it had fulfilled the conditions that are now required for such a task as it had been required to perform. But, besides this, in consequence of having been exposed for sixteen years, in its sub-littoral situation, to the blasts of the moist sea-wind, the copper wires were in many places eaten into by corrosive action where the zinc wire of the woof crossed them, so as to reduce to some considerable extent their original conducting capacity. The conductor was so fixed that it descended from the summit of the spire along the slope, and along the face of the tower, then crossed the lead flashing of the roof, passed down the main wall of the building near the intersection of one of the transepts with the nave, and was finally plunged into a well dug into the grave-yard about twenty feet from the place where it reached the ground. At the time of the storm a flash of light was seen to pass along the upper part of the track of the conductor, and this flash was accompanied by an instantaneous crash of thunder, that awoke most of the slumbering inhabitants of the close. The destruction of the conductor, however, was not discovered until the second morning after the storm, when some shattered fragment was observed projecting from the tower. It was then found that about forty feet of the conductor at the top of the spire still remained uninjured in its place, but that for the next one hundred feet below this the woven metallic band had been scattered into a shower of short fragments of copper wire, which were strewed thickly upon the roof of the tower and of the lower building. These fragments were three-quarters of an inch long, corresponded in length with the materials of the transverse crossings of the zinc wire, and bore unmistakable indications of galvanic corrosion upon their ends. The lower portion of the conductor was uninjured, but one of the iron rain-pipes, which descended from the roof of the transept a few feet away, had been shattered by the discharge. It was therefore manifest that from the leaden covering of the roof downward the incompetent conductor had been assisted in its work by the roof and its numerous iron rain-pipes, and this intelligibly accounted for its own preservation through that portion of its course; and it was also clear that the earth communication of the conductor was not ample enough for the transmission of the entire discharge, as, if it had been, the lower part of the conductor would have been shattered like the upper part, and the rain-pipe would have remained uninjured. The resistance of the earth communication of the conductor, measured through the uninjured fragment, was sixty-five ohms; that is, some twelve or sixteen times greater than under any circumstances it ought to have been. So far, therefore, from this maligned conductor being open to reproach, it had done exactly what it was scientifically bound to do, and what any expert could have foretold that it would do, under the circumstances which have been described.

But the critic who sounded the note of alarm in *The English Mechanic* was also egregiously wrong in another by no means unimportant particular. The unfairly maligned conductor had not "proved worse than useless when a thunder-storm came." As some more appreciative commentator figuratively but not inaptly remarked at the time, it had "gallantly died at its post in the efficient performance of its duty." Although the lightning-conductor was destroyed, the exceedingly beautiful stone spire remained absolutely uninjured. It had not even a scar upon its face. This circumstance of the destruction of a lightning-rod of too narrow capacity without injury to the building to which it is attached is by no means of infrequent occurrence. About five inches of the top of the second conductor which Franklin himself erected in Philadelphia were destroyed by a discharge which was seen to strike the rod, and which also made itself visible in a luminous blaze in the dry earth around its base; and Franklin adroitly claimed the incident as a proof that Nature itself had borne testimony in favor of his invention. The brass wire conductor of the war-ship Jupiter was struck at sea on June 13, 1854, and the sixty brass wires of which it was composed were shattered into fragments the size of a pin; but no injury was done to the vessel. A large number of instances of a kind very similar to this well-known and altogether typical case might be adduced, did space permit; but it must not therefore be inferred that so desirable a result is in the proper order of events. When a lightning-rod "dies at its post" in a successful defence, as in the memorable Chichester case, the auspicious issue is due to the accidental circumstance that no better extraneous earth contact is within the striking reach of the discharge. If this were the case, the lightning would certainly be diverted from the course of the conductor into the more facile way, and, in making its devious leap into the more available path, would be quite sure to leave the marks of its divergent passage in some undesirable form. It is on this account, as well as because of the wasteful outlay which is required to supply a new rod when an old one has been destroyed, that lightning-conductors of insufficient dimensions, and of bad principles of construction, are by no means to be looked upon with tolerance, to say nothing of favor, notwithstanding the occasional good service that may be entered to their account. — *Edinburgh Review.*

[1] That is, of one-sixteenth of an inch in diameter.

The Bridge over the Straits of Messina. — In the exhibition now open at Turin, says a foreign exchange, the directors of the Novara & Pino Railway show the drawings and plans for the projected bridge over the Straits of Messina. The narrowest portion of the straits is two miles across, but the depth there is 150 metres (487′ 6″), while the shallowest part, which is 110 metres (361′) deep, runs between Cap del Pezzo and Ganzirri. Although the distance across at the latter point is half a mile greater than at the narrowest portion of the straits, its greater shallowness has caused it to be selected as the spot for the bridge. In addition to a double line of rails, it is intended to make the bridge wide enough to include a road for ordinary carriage traffic. The viaduct will be supported by two land towers and three piers, each 1000 metres (3280′) apart. The foundation of the three piers will be constructed of granite ballast up to within 23 metres (75′ 6″) of the surface of the water, and of granite masonry, the latter being carried to 10 metres (33′) above the water. The bridge will terminate on either shore in tower-shaped piers, constructed also of granite, with the ordinary dry foundations. The height of the bridge above the water will be 100 metres (328′). The entire upper portion of the bridge is to be built of steel, and the construction is to be carried out in the same way as the bridge over the Mississippi at St. Louis. — *Exchange.*

LABORERS' COTTAGES IN IRELAND.

AN Act of Parliament was passed in August 1883, with the object of bettering the condition of agricultural laborers in Ireland by providing improved house accommodations for them. By it the local sanitary authority is, after certain formalities are accomplished, enabled to obtain a loan from the Treasury for the purchase of sites and erection of buildings. The money is to be repaid in twenty, twenty-five, thirty, or thirty-five years, and the annual instalment of £100, for those periods vary from £7 0*s.* 8*d.*, to £5 7*s.* 2*d.* If a cottage should cost £100, which it must if the expenses of investigation are counted, the local authority will have to pay £5 7*s.* 2*d.*, for thirty-five years. But it is not anticipated that tenants can pay more than a shilling a week, and in consequence the deficit between £2 12*s.* and £5 7*s.* 2*d.*, must fall upon ratepayers. There will also be a charge for repairs. It is not surprising that the Poor-Law guardians are not enthusiastic in carrying out the provisions of the Act. In two out of the four provinces in Ireland, as there have been no petitions presented, the Act is a dead letter. The committee who were appointed this year for the purpose of ascertaining whether any amendments to the Act are necessary have not completed their inquiry; but enough was said to suggest the difficulties which attend the least improvement of Irish properties.

The local authority is to take the initiative by asking the Local Government Board to hold an inquiry before an official inspector. After it has been held, the project is to be advertised. Next there is to be an application for a provisional order. Then there is to be an appeal to Parliament for confirmation of the order. All this circumlocution has to be got through before the guardians are in a position to execute the scheme, or, in other words, to tax themselves. Very few and very weary are the victors. It appears that only one union has as yet got as far as the application for a loan, and not one cottage has been commenced in all Ireland.

At the inquiry, plans and specifications of the proposed cottages must be exhibited, which may be prepared by an architect or a builder. The Local Government Board desire to interfere as little as possible with the discretion of the sanitary authorities in regard to the designs, but the plans are to comply with the following conditions: —

1. The number of rooms must be sufficient to provide for the due separation of the sexes, and there should be a kitchen and at least two bed-rooms in every house.

2. Every habitable room should have a height of not less than eight feet throughout, except in the case of a room constructed in the roof, when one-half of the area of the room should have a clear height of seven feet.

3. Each habitable room should have one or more windows of a total area of glass of at least one-twelfth of the floor space, and all bed-rooms should be floored with boards or tiles; the ground floor should be raised not less than nine inches above the level of the external ground.

4. A proper privy should be constructed, in each case separate from the dwelling-house, and distant at least ten feet therefrom; the floor should be flagged or otherwise rendered impervious, and raised at least four inches over the adjoining ground.

It is estimated by the officials that a cottage with the minimum accommodation described in the above conditions will cost from £65 to £70. Half an acre of land at 10*s.* a year, would at twenty-five years' purchase be £12 10*s.*, and the difference between £82 10*s.*, and £100 represents the cost of employing a surveyor, fees to officers, Parliamentary, and other costs. Seventeen-and-a-half per cent, for fees, or seven years' rental, appears entirely disproportionate when the character of the work is remembered.

There is diversity of opinion as to whether such a cottage as is proposed by the Local Government Board can be carried out for £70, or for much less than £90. The simplest way to solve the problem would be to erect a model cottage, but probably a special Act would be necessary for so simple an experiment. According to the official specification the walls are to be of rubble eighteen inches thick, the living room is to be floored with concrete, the bed-rooms with wood, and the roof is to be of slates. As the cottages are security for the re-payment of the loan it is wise to make them substantial, and it is hardly fair to compare the Board's type of cottage with one that has been erected by a private landlord. On the Duke of Devonshire's estate cottages have been built at £105 the pair. The floors in all the rooms are of concrete, but the inspector of the Local Government Board maintains that the material is not adapted for a bed-room floor, and he doubts whether it has any advantage over mud or clay. The objection to concrete arises from its porosity and slowness in drying whenever washed. A civil engineer who has acted for two of the Poor-Law unions, said that he had erected a brick and stone and slated cottage, containing a kitchen and two bed-rooms for £70; but that if a large number of them were built the cost would be about £65. The floor of the kitchen would be of flags, and the bed-rooms would be boarded. His objection to concrete was the difficulty of getting it properly made, imperfect concrete being dangerous. In Wexford plans have been prepared for cottages to cost £60 2*s.* 7*d.*, and if concrete were available it was expected that there would be a reduction of about £5 on that sum. One witness went so far as to say that houses for which the guardians will pay £70 could be erected by a farmer for £35; but it supposes that labor will be thrown in. It is, however, unwise to be scrutinizing the cost of building rather than the legal and official expenses. When it is found that the cost of proving the title for the site of a single cottage can amount to £75, and for a row of forty-five houses can be £575, it is evident that an opportunity is offered for law reform. — *The Architect.*

VENTILATING HAY-MOWS.

MARSHALLTOWN, IOWA, October 6, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I notice an article in the *American Architect* of Sept. 27, referring to the suggestions of the *Scientific American* in relation to the frequent burning of barns. After endorsing the theories of the *Scientific American*, you also advise architects to give thorough ventilation to barns and hay-lofts. As this matter is of more vital importance than most people, even scientific men, are aware of, I will venture a few suggestions, to bring out and develop a proper mode to ventilate hay-lofts, and to give veterinary surgeons something to think of. I will venture to say that one half of the diseases in horses and cattle is brought on by feeding spoiled hay, either taken from haymows or stacks, also from grain feed that has been heated and spoiled. I believe that the heating process, the mouldy parts and must that it produces, will create germs of various kinds that cause diseases in horses and cattle and perhaps swine. I will now venture to suggest a mode of ventilating hay-mows, stacks or graineries. I will suggest introducing various air-ducts through the hay-mows, both horizontal and perpendicular, opening directly outside, so as to admit a current of fresh air, which will cool and cure the hay or grain, and leave it in a healthy state. This may be done by building board ducts and perforating them as much as possible, and then running from the horizontal ducts perpendicular ducts up through the mow, not more than eight feet to ten feet from each other. Or this may be accomplished in another manner, by using some round instrument, six inches to ten inches or even larger in diameter, say a galvanized-iron tube; stand it over the openings in the main air-duct, and as the mow is filled up, draw these pipes up through the hay, until the top is reached. This will afford complete ventilation, which will be increased as the mow becomes heated; hence the fresh air drawn in will cool and cure the hay or grain, and by this process thousands of tons of hay and grain can be saved and a vast amount of property will be saved from the destroying elements. Hoping we may receive further light upon this subject, I am,

Yours truly, F. M. ELLIS, Architect.

QUESTIONS CONCERNING CHIMNEYS.

HARTFORD, CONN., October 10, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — A. Do gases resulting from combustion contract or expand when rising?

1. Should the flue of a high steam chimney be of the same area throughout, or gradually increase, or gradually diminish as it approaches the top?

2. Would it be advisable in any case to suddenly flare or contract the top of such a flue.

3. Would the same treatment apply to the small chimney of a house.

4. Is it preferable, as regards draught, to carry the flue of a house chimney vertically to the roof, or to give it an oblique, undulating course?

5. What is the proper area of flue for an open fireplace, 3′ 6″ wide, and 2′ 6″ high?

6. If a 12″ circular flue would allow sufficient area for a given amount of smoke, is there any objection to making the flue 12″ square, and has the latter arrangement any merits aside from economy of construction.

7. Is an 8″ x 8″ flue large enough for an ordinary coal grate?

B. What treatment is employed to produce the peculiar effect of the shingles on Mr. Mitchell's house and stable, Gardner Road, Brookline, Mass.

X.

[ANSWERS. A. Gases generated in a confined space expand on emerging from it, but contract again subsequently as they lose heat.

1. In theory, the flue of a steam chimney should be cylindrical, and of the same area throughout. In practice, however, it is now not unusual to increase the area slightly with the height, at the rate of perhaps one additional inch of diameter for every twenty-five feet rise above the base, and the effect is thought to be good.

2. If such a flue were of sufficient capacity throughout, it is very doubtful whether any advantage could be gained by flaring at the top, although, if the flue were originally too small, a little improvement in the draught might possibly be gained in that way. In many cases a damper is placed over the top of the chimney, which of course contracts the outlet more or less, without material disadvantage.

3. The same principles apply to small as to large chimneys.

4. For draught, it is almost always best, unless the flue is large, to carry it up as nearly vertically as possible. If the chimney is exposed to down draughts from higher buildings or hills in the neighborhood, or if it is too large for its work, change of course may help to check downward currents, and such deviations from the vertical line help to prevent the fall of soot in summer from the chimney into the room.

5. An open fireplace three-and-one-half feet wide, and two-and-one-half feet high should have a flue 12″ x 24″, or 16″ x 16″, if possible, although a flue 12″ x 16″ might do, if carried up nearly straight.

6. There would be no objection to using a 12″ x 12″ square flue instead of a circular one 12 inches in diameter. The circular flue will, however, be rather the better of the two, as being less liable to down-draughts.

7. An 8″ x 8″ flue is too small for a soft-coal grate, except, perhaps, one of the miniature English ones. For hard coal or coke it may be made to do, if the chimney is high, and the flue straight; but 8″ x 12″ would be much better.

B. Staining with oil of creosote. — Eds. American Architect.]

A QUESTION OF COMMISSIONS.

Minneapolis, Minn., October 7, 1884.

To the Editors of the American Architect: —

Dear Sirs, — What are the usual commissions charged when an architect furnishes complete plans and elaborate details for a house costing from seventy-five to one hundred thousand dollars, two-thirds of the work being done by the day, the architect buying all materials and paying all bills for labor and materials, and being responsible for same. An early answer will confer a favor on

Respectfully yours, Architect and Subscriber.

[We do not think there is any rule or custom in regard to the proper charge for the extra work imposed upon an architect by employing him to buy the materials and pay workmen. Perhaps the commission allowed by courts to trustees of estates for buying and selling property for the trust estate, which is, we believe, two per cent on the amount involved, might be a guide, although the labor and special knowledge required of an architect for performing such a duty are greater than those expected of trustees. — Eds. American Architect.]

ARCHITECTURAL PICTURE-MAKING.

Chicago, September 14, 1884.

To the Editors of the American Architect: —

Dear Sirs, — I write you to inquire where I may be able to obtain a first-class work on architectural picture-making, with ink and water-colors. Have seen the work recently published by Mr. Linfoot, but it is not exactly what I wish. Would be much obliged if you could give me any information in regard to the matter.

Yours truly, R. B. Hotchkin.

[To our mind, the most useful book ever published for those who wish to work effectively in various styles is J. D. Harding's "*Principles and Practice of Art.*" It is illustrated by Indian-ink washed drawings and wood-cuts, but they are so admirable of their kind, and the explanations of the methods of obtaining effects by light and shade and composition are so clear, that the ambitious perspective draughtsman will find it a treasure. After this, any of Samuel Prout's books or lithographed drawings will be excellent, showing the application by a great artist to architectural drawing of the technical science to which Harding's book furnishes the key. These books, with the exercises in Ruskin's "*Elements of Drawing,*" as practice for the hand and eye, will teach our correspondent all he will need to learn for a long time. The "*Principles and Practice of Art*" is out of print, but may be picked up at the second-hand book-stores, and the same is true of the Prout works. Ruskin's "*Elements of Drawing*" should be procured, if possible, in the English edition, but in default of this, Wiley & Sons' reprint, published in New York, is better than nothing.—Eds. American Architect.]

NOTES AND CLIPPINGS.

The Weight of Hard-Woods. — The following is given as the weight of hard-woods per foot, board measure. Some allowance must be made in the weight of fresh cut, as the same wood when green differs somewhat in weight in different localities: —

Name of wood.	Green. lbs. to 1 foot.	Dry.	Name of wood.	Green. lbs. to 1 foot.	Dry.
Ash	4½	3½	Hickory	5	4½
Apple	5	4	Holly	5½	4½
Beech	5	4½	Lignumvitæ	9	8½
Birch	4½	3½	Maple	5	4½
Basswood	3½	2½	Mahogany	5½	4½
Chestnut	4	3	Oak	5	4½
Cherry	4½	3 1-5	Poplar	3½	2½
Cypress	4	3	Rosewood	8	6½
Cedar	4	3	Walnut	4½	3 1-5
Elm	4	3			

— *Miss. Valley Lumberman.*

Electric Light-House at Rio de Janeiro. — An electric light-house has lately been erected on the island of Raza, at the entrance to the Bay of Rio Janeiro. The light-house proper is eighty-five feet in height, and is built upon a rock two hundred and thirty feet in height, so that the focus of the light of the apparatus is fixed at a total elevation of three hundred and fifteen feet above the sea. The electric current is produced by a continuous-current Gramme machine, working at the rate or seven hundred revolutions, and feeding a light rated to be of two thousand candle-power. The Gramme machine mentioned is worked by a stationary surface condensing steam-engine, such arrangement being rendered obligatory, owing to the lack of fresh water. All the fittings are double, so as to prevent interruption by unforeseen accidents; still, to render positive certainty, oil-lamps of high lighting power are always kept in readiness. The light is of the revolving class, having two white disks and one red, succeeding one another at intervals of fifteen minutes. It is asserted that, on clear nights, the light is visible as a distance close on to thirty-five statute miles; but the general efficacy of the system is tremendously impaired during foggy weather. — *Engineering News.*

In the Style of Queen Anne. — Let me offer a few reflections on the mania for Queen Anne houses that is now rife, and which I venture to pronounce a failure, and which, with more certainty, will be decreed a failure a generation hence. The thing is all wrong and on wrong principles. The Queen Anne architects indulged in no such ridiculous, fantastic freaks as we see now exhibited, and simply because such was entirely opposed to the nature and character of brick. Brick is a simple, honest, plain material, with a good color and hard, smooth surface — that is all. Whatever style can display these qualities best is the Queen Anne style and no other. The result of the modern caprices will be seen ten or twelve years hence, when certainly decay will have disintegrated or destroyed the whole, or when the owner's heart will have sickened of the frequent repairs and restorations. The old Queen Anne houses produced effect by the beautiful color and surface, the bricks being laid almost touching, with the thinnest wash of mortar between. The result is that no rain or damp ever gets between. The modern system of building is opposed to this, thick layers of mortar being interposed, with the certain result that all the elaborate gables, etc., soon begin to separate. Bricks put together in elaborate forms have no strength, no more than stones laid on earth, but displayed in surface it becomes as firm and smooth as a billiard-table. Even mouldings should be raised in the faintest degree, and the less they are the richer the effect. There is an old house out at Clapton, a "seminary for young ladies," that for design, simplicity, and pure brickwork, mixed with stone and design of outline, puts to shame all the brick phantasmata that are now covering the city. Looking at the pretentious masses that cover the new settlement of Cadogan Square or line the Embankment, one does not feel at all drawn back to the days of Queen Anne. There is a coarse, raw treatment in their embroidery, to which the brick lends itself but reluctantly. The material is too rude for such fine work. There is another fad in house adornment, which, it may be said, has run its course. This was the daubing over houses "liver-red," green, blue, etc. These efforts looked daring enough at first, but presently, as the dirt accumulated, they turned all kinds of horrid tints, and the house looked dirtier and shabbier than ever. — *Tinsley's Magazine.*

A Gravity Railway.—Some interesting particulars regarding a curious railway at Falcon Cliff Castle, on the Isle of Man, have recently been supplied by a British railroad journal. The railway, as described, consists of an up and a down line of four-foot gauge, running parallel for about fifty yards on a gradient of about one in three. The vehicles, two tramway cars, are moved by water poured into an iron tank upon which each car rests, and the running is controlled by a stationary hand-brake. The tank is of angular shape and rests upon four wheels of the usual railway-coach pattern, with a single flange on the tire. The shape of the tank necessitates two of the wheels being placed lower than the other two, while the body of the car, resting on the horizontal line of the angle, admits of it preserving a perfect level, although running on so enormously steep an incline. A cable, permanently fixed at each end to the cars, runs in the centre of the four-foot gauge, and round a wheel about six feet in diameter stationed at the top of the gradient. The brake referred to is upon this large wheel. The length of the cable is such that, when one car on one pair of rails is at the top of the gradient, the other upon the parallel pair of rails is at the bottom. The tanks upon which the cars are fixed are fed with water at the top of the incline and emptied at the bottom, the weight of water in the filled tank being sufficient to sink this car to the bottom of the gradient, and at the same time, by means of the attached cable, to draw upon the car. The mechanism for filling the tanks can be worked by the same man who has charge of the brake of the wheels upon which the cable revolves, and by means of which the speed of the running of the cars is controlled.—*The Iron Age.*

The Bennington Monument. — The Bennington Battle Monument Association elected Thomas Allen, artist, of Boston, a member of the body, Saturday evening. Mr. Allen is a great-grandson of the Rev. Thomas Allen of Pittsfield, Mass., who won renown as the fighting parson of the Revolution, at the battle of Bennington. The sculptor, Olin L. Warner, of New York, who has for some years been a member of the Association, and who is a descendent of Samuel Warner, a brother of Col. Seth Warner, of Bennington battle fame, and Mr. Allen were elected the confidential advising artists of the Association. The Association is a close corporation, and its list of members is generally full, but the policy of the body is to keep a few vacancies for the election of persons like Messrs. Warner and Allen, who are artists, and are descendants of those who fought in Bennington, or are otherwise likely to be disinterestedly identified with the monument project. The object of this is to bring an art element into the Association, which shall not only aid in the erection of a suitable monument, but shall have an æsthetic care for it when it is erected. — *Troy (N. Y.) Times.*

A Church Built from a Single Tree. — A redwood tree, cut in this county, furnished all the timber for the Baptist church in Santa Rosa, one of the largest church edifices in the country. The interior of the building is finished in wood, there being no plastered walls. Sixty thousand shingles were made from the tree after enough was taken for the church. Another redwood tree, cut near Murphy's Mill, in this country, about ten years ago, furnished shingles that required the constant labor of two industrious men for two years before the tree was used up. The above statements are vouched for as true by Supervisor T. J. Proctor. — *Santa Rosa (Cal.) Republican.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

306,374. SKELETON TOWER. — John S. Adams, Elgin, Ill.

306,375. PORTABLE DRILLING-MACHINE.—John F. Allen, Brooklyn, N. Y.

306,376. RATCHET-DRILL. —William J. Armstrong, Indianapolis, Ind.

306,393. MACHINE FOR TRIMMING LUMBER.—Thos. J. Frazier, Lyons, Iowa.

306,394. SCREW-DRIVER.— George W. Hael, Minneapolis, Minn.

306,400. FASTENING FOR DOOR-KNOBS.—Austin D. Hoffman, Chicago, Ill.

306,402. SPRING-HINGE. — Theophilus Johnston, Orange, N. J.

306,418. COMBINED DRAWING-SQUARE AND MITER. — John Muller, Kansas City, Mo.

306,421. DISINFECTING APPARATUS. — Samuel W. Parker and Henry Blackman, New York, N. Y.

306,424. FLOOR-CLAMP. — Henry A. Pickard, Danvers, Mass.

306,432. DRUM FOR HOT-AIR FURNACES. — William F. Rossman, Hudson, N. Y.

306,438. VENTILATOR FOR STOVE-PIPES. —Wladislaus St. Mielcarek, Grand Rapids, Mich.

306,439. WRENCH. — Benjamin F. Stockford, Sturgis, Mich.

306,453. ELEVATOR. — Orville D. Wolcott, Cedar Rapids, Iowa.

306,460. DOOR-LOCK. — Hamilton Baluss, Wayne, Mich.

306,461. FLUSHING TANK OR VESSEL. — Wm. Bartholomew, Lambeth, County of Surrey, England.

306,480. SASH-FASTENER.—Benj. J. Goldsmith, Saratoga Springs, N. Y.

306,481. METHOD OF REPRODUCING DRAWINGS AND OTHER LINE WORKS OF ART. — Vincent J. M. Gottlieb, West Hoboken, N. J.

306,489. FIRE-ESCAPE. — George W. Hubbard, Chicago, Ill.

306,491. SCREW-DRIVER. — George W. Jackman, Littleton, N. H.

306,492. SCREW. — George W. Jackman, Littleton, N. H.

306,507. PLANE.—Chas. A. Meekins, Pine Meadow, Conn.

306,520. FIRE-ESCAPE. — Newman J. Powell, Pontiac, Ill.

306,522. MANUFACTURE OF CONCRETE.—Ernest L. Ransome, San Francisco, Cal.

306,523. FLUSHING-TANK.—Noel W. R. Read, Denver, Col.

306,525. TURNING-LATHE. — George S. Roberts, Meredith, N. H.

306,526. FIRE-ESCAPE.—Max L. Rossvally, Brooklyn, N. Y.

306,545. REVERSIBLE LATCH. — William E. Sparks, New Haven, Conn.

306,554. LATCH. — George Tittley, Chicago, Ill.

306,575. STANDING PIPE FOR THE EXTINGUISHMENT OF FIRES. — Frederick W. Brown, Albany, N. Y.

306,592. SUPPLEMENTAL JAW ATTACHMENT FOR HAND-SCREWS. — Albert De Laski, Lynn, Mass.

306,603. WASH-BASIN PLUG. — John S. Gilbert, New York, N. Y.

306,631. FASTENER FOR MEETING-RAILS OF SASHES. — Wm. F. McDonough, Boston, Mass.

306,638. METHOD OF AND APPARATUS FOR HEATING AND VENTILATING BUILDINGS. — Ira James Ordway, Chicago, Ill.

306,660. BRICK-MACHINE. — William H. Stewart, Booneville, Mo.

306,662. AUTOMATIC FIRE-EXTINGUISHER. — William H. Stratton, New Haven, Conn.

306,690. BIT-STOCK. — Richard D. Johnson, Springfield, Mass.

306,693. MOULDING-PLANE. — James R. Lawrence, Durham, N. C.

306,694. CONTINUOUS GIRDER OR TRUSS. — Gustav Lindenthal, Pittsburgh, Pa.

306,705. MEANS FOR SECURING WIRE LATHING TO GIRDERS. — David W. Woods, Clinton, Mass.

306,707. HEATING-APPARATUS. — Corydon Wheat and Alfred Catchpole, Geneva, N. Y.

306,708. FIRE-EXTINGUISHER.— Daniel C. Stillson, Somerville, Mass.

SUMMARY OF THE WEEK.

Baltimore.

DWELLINGS. — Three-st'y dwell., for Dr. Moale, Charles St., cor. Chase St., 46′ 6″ x 78′, to be built of brick, with Potomac red sandstone finish, to cost $35,000; Wm. Ortwine, contractor; Chas. E. Cassell, architect.

Ten three-st'y stone front dwells., for A. L. Gorter, Esq., 18′ x 59′ each, cor. Charles and Preston Sts.; Chas. E. Cassell, architect.

Twenty-three three-st'y stone front dwells., for Jno. M. Cone, Esq., 17′ 6″ x 50′ each, on Boundary Ave.; Charles E. Cassell, architect.

BUILDING PERMITS. —Since our last report thirty-seven permits have been granted, the more important of which are the following: —

Joshua Regester, 4 two-st'y brick buildings, e s Aisquith St., s of Townsend St.

Chas. Gantz, 2 two-st'y brick buildings, e s Holbrook St., n of Preston St.

Binyon & Oudoun, 3 three-st'y brick buildings, commencing n w cor. Pratt and Choptank Sts.

Christ. Thom, 4 two-st'y brick buildings, s s Prince St., w of Pulaski St.

H. Hetting, 3 three-st'y brick buildings, n s Columbia Ave., e of Scott St.

Dr. Wm. A. Moale, 4 two-st'y brick buildings, e s Division St., s of Lafayette Ave., and 5 two-st'y brick buildings, Etting St., s of Lafayette Ave.

Wm. O'Connor, three-st'y brick building, e s Harrison St., between Fayette and Gay Sts.

P. Daily, three-st'y brick building, s s West St., between Charles and Hanover Sts.

Francis White, three-st'y brick building and two-st'y brick stable, w s St. Paul St., n of Chase St.

L. H. Robinson, three-st'y brick buildings, s e cor. Broadway and Bank Sts.

Julia Herfert, three-st'y brick building, s s Canton Ave., between Broadway and Register St.

J. G. Bramble, 4 two-st'y brick buildings, w s Collington Ave., between Pratt and Gough Sts.

Aug. Krebs, 2 three-st'y brick buildings, w s Hanover St., between Clement St. and Fort Ave.

Wm. McLaughlin, 6 two-st'y brick buildings, n s Barney St., w of Riverside Ave.

Henry Westphal, 10 two-st'y brick buildings, e s Patapsco St., n of Barney St.

Boston.

BUILDING PERMITS. — *Tremont St.*, opposite Coventry St., Ward 19, for G. Currier, office and store, 20′ x 20′, flat.

Beacon St., No. 374, Ward 11, for J. W. Converse, brick dwell., 46′ x 75′ 6″, hip; J. H. Kelley, builder.

Berkeley St., No. 90, Ward 11, for F. T. Horn, brick apartment-house, 23′ 2″ x 48′, flat; A. Knowlton, builder.

Berkeley St., Nos. 86 *and* 88, Ward 11, for Mary P. Knowlton, 2 brick apartment-houses, 23′ 2″ x 48′, flat; A. Knowlton, builder.

Old Harbor St., near Harbor View St., Ward 24, for City of Boston, brick gate-house, 26′ 8″ x 42′, hip; J. N. Fairfield, builder.

Neponset Ave., near Walnut St., Ward 24, City of Boston, brick grammar school, 84′ x 92′, pitch; G. Currier, builder.

Blossom St., cor. Parkman St., Ward 9, City of Boston, brick primary school, 60′ x 125′, pitch; R. R. Mayers & Co., builders.

Washington St., Nos. 2317-2331; Ward 19, for J. P. Robinson, Esq., 2 brick mercantile houses, 27′ 9½″ x 76′ and 53′ 6″ x 100′, flat; J. W. Coberon & Co., builders.

Woodward Ave., No. 257, Ward 21, for B. F. Bean, 2 wooden dwells., 25′ x 62′, flat; C. A. Jefferson, builder.

Everett St., near Pearl St., Ward 25, for M. A. Curtis, wooden dwell., 25′ x 28′, pitch.

Saratoga St., No. 660, Ward 1, for Mr. L. Sturtevant, wooden storage, 15′ x 24′, pitch; E. J. Turner, builder.

Massachusetts Ave., near Englewood Ave., Ward 25, for City of Boston, wooden mechanical, 20′ x 30′, pitch; D. M. O'Connell, builder.

Terrace St., near Saratoga St., Ward 1, for G. J. Cabe, wooden dwell., 27′ 2″ x 30′ 2″, pitch; Chas. Valley, builder.

Zeigler St., Nos. 41 *and* 43, Ward 20, for F. P. Brooks, wooden mechanical, 31′ x 50′, flat; W. Heyford, builder.

Peaceable St., between Winship and Rockland Sts., Ward 25, for Geo. W. Wentworth, 2 wooden dwells., 20′ x 28′, pitch; D. M. O'Connor, builder.

Larnard St., near Norfolk St., Ward 24, for J. B. Rockwell, wooden dwell., 17′ x 17′ and 25′ x 31′, pitch; B. Rockwell, builder.

South St., near Washington St., Ward 23, for M. M. Herbert, wooden stable, 16′ x 18′, pitch; W. H. Warren, builder.

Brooklyn.

BUILDING PERMITS. — *Jackson St., No.* 100, s s, 100′ e Leonard St., three-st'y frame (brick-filled) tenement, tin roof; cost, $5,500; owner, Mrs. Petit, Jr., on premises; architect, Th. Englehardt; builder, P. Kunzweiler.

Arlington Pl., s w cor. Halsey St., 2 three-st'y brown-stone dwells., tin roofs, wooden cornices; cost, each, $6,500; owner, Mr. Westlake, 4 Spencer Pl.; architect, Amzi Hill; builder, D. H. Fowler.

President St., Nos. 37 *and* 39, s s, 80′ e Van Brunt St., two-st'y brick church, tin roof; cost, $8,000; owner, Rev. J. Fransiola, Warren St., near Hicks St.; architect, A. Pauli; builders, Francis Connelly and J. G. Curtis.

Franklin Ave., s w cor. Wallabout St., one and three st'y brick mill, gravel roof; cost, $10,000; owner, A. Dugan, 999 Myrtle Ave.; architect, A. S. Hait.

Java St., n s, 275′ e Franklin St., 2 three-st'y frame (brick-filled) tenements, gravel roofs; cost for both, $9,000; owners, Mrs. Nare and —— Zum, 312 Manhattan Ave.; architect, Fred. Weber; builder, John Fallon.

Fifteenth St., n s, 283′ 4″ West Fourth Ave., three-st'y frame tenement, tin roof; cost, $5,000; owner, W. H. Conklin, 475½ First St.; architect and builder, I. H. Herbert.

Magnolia St., s s, 175′ e Hamburg Ave., two-st'y frame (brick-filled) dwell.; cost, $3,000; owner, Owen McSherry, 183 Stuyvesant Ave.; architect, Ernest Dennis; builder, F. Bertram.

Greene Ave., No. 255′, n s, 275′ e Grand Ave., four-st'y brick double flat, frame and gravel roof; cost, $12,000; owner, etc., J. N. Smith, 257 Greene Ave.

Decatur St., s s, 163′ 11″ w Throop Ave., 4 three-st'y brick dwells., gravel roofs; cost for all, $12,000; owner, Samuel Booth, 50 South Portland Ave.; architect and carpenter, W. C. Booth; mason, C. Cameron.

Park Ave., Nos. 708 *and* 710, 2 three-st'y frame (brick-filled) tenements, tin roofs; cost, each, $4,500; owner, C. F. Tewes, Jr., cor. Fifth and South First Sts.; architect, Th. Engelhardt.

Boerum St., Nos. 123 *and* 125, n s, 150′ e Ewen St., two-st'y frame (brick-filled) stable and dwell., tin roof; cost, $6,000; owner, George Peth, 116 McKibbin St.; architect, Th. Engelhardt; builders, George Doering and J. J. Hopper & Son.

De Kalb Ave., n s, 350′ e Myrtle Ave., two-st'y frame dwell., tin roof; cost, $2,600; owner, Jacob Muller, Throop Ave.; architect, F. Holmberg.

Bushwick Ave., e s, 51′ n Grove St., 2 two-st'y frame (brick-filled) dwells., tin roofs; cost, each, $3,500; owner, T. S. Bartlett, 805 Quincy St.; architect, F. Holmberg.

Quincy St., s s, 182′ e Reid Ave., 4 two and three st'y rear brown-stone dwells., tin roofs; cost, each, $4,500; owner, A. S. Walsh, Madison St.; architect and builder, A. Miller.

Lafayette Ave., s s, 115′ e Sumner Ave., 5 two-st'y buildings, tin roofs; cost, each, $4,000; owner, Michael Moran, 675 Gates Ave.; builder, Mr. Warren.

Ninth St., s s, 100′ w Fifth Ave., three-st'y brick store and hall, tin roof; cost, $13,000; owner, Rescue Temperance Union and Christian Association, Ninth St., between Fourth and Fifth Aves.; architect, W. H. Norris; builder, J. Shannon.

Prospect Pl., s s, 140′ e Nostrand Ave., 2 two-st'y dwells., tin and slate roofs; cost, each, $6,000; owners, Elexander & Ellis, Washington Ave., corner Flushing Ave.; architect, W. M. Coots.

North Eighth St., s s, 128′ e Third St., four-st'y frame tenement, (brick-filled) tin roof; cost, $5,500; owner, John Starkey, 331 Fourth St.; architect, Fr. Weber; builders, Jno. Starkey & Son.

Quincy St., n s, 22′ w Marcy Ave., 4 two-st'y brown-stone dwells., gravel roofs; cost, each, $5,500; and three-st'y brown-stone store and dwell., gravel roof; cost, $6,000; owner, etc., David Beasley, 39 Pulaski St.

Gwinnett St., No. 113, n s, 160′ w Harrison Ave., four-st'y brick storage, gravel roof; cost, $9,000; owners, Cooper & McKee, 111 Gwinnett St.; architect, N. Herbert; builders, S. Burrows and R. Ferguson.

Broadway, No. 12, s s, 29′ 9″ e First St., four-st'y freestone and brick saloon and dwell., tin and slate roof; cost, $25,000; owner, Otto Huber, cor. Meserole St. and Bushwick Ave.; architects, Lederle & Co.

Chicago.

BUILDING PERMITS. —S. Baur, two-st'y store and dwell., Webster Ave.; cost, $2,500.

H. W. Seman, 5 three-st'y dwells., Elm St.; cost, $25,000; architect, S. G. Halberg; builder, A. Carlson.

J. J. Gore, 3 three-st'y dwells., 2617-2621 Wabash Ave.; cost, $12,000; architect, T. L. Charnley; builders, Barney & Rodatz.

F. Campbell, 5 two-st'y dwells., 381-389 Irving Ave.; cost, $10,000; architects, Edbrooke & Burnham; builder, T. Campbell.

George M. Hull, 2 two-st'y dwells., 1168-1170 West Harrison St.; cost, $5,000; architect, W. F. Furber; builder, Geo. M. Hull.

J. Roscopht, three-st'y store and dwell., 281 North State St.; cost, $3,000.

N. T. Wright, two-st'y barn, 2941 Michigan Ave.; cost, $3,000; architect, T. B. Townsend; builders, A. D. Elmers & Bro.

J. A. McEroy, two-st'y dwell., 409 Hermitage Ave.; cost, $4,000; architect, E. Vigeant; builders, G. Lehman & Co.

Wm. Keehan, two-st'y dwell., 3820 Wallace St.; cost, $2,500.

E. S. Blake & J. W. Crawford, 2 three-st'y dwells., 143-145 Dearborn Ave.; cost, $10,000; architects, Furst & Rudolph; builders, Robinson & Miner.

P. Conway, two-st'y dwell., 466 Wood St.; cost, $2,500.

Scott & Sage, one-st'y store, 158-164 Kinzie St.; cost, $9,000.

J. Evoy, two-st'y store and dwell., North Ave.; cost, $4,000; architect, H. Kley; builders, Peterson & Delaney.

W. Carberry, two-st'y store and dwell., 2727 Archer Ave.; cost, $4,000; architect, L. Frey; builders, James & Buckley.

T. Schwennesen, three-st'y dwell., 86 Hernden Ave.; cost, $5,000.

A. M. Gentry, 6 two-st'y dwells., 3552-3562 Prairie Ave.; cost, $18,000; architect, L. B. Dixon; builders, Stevensen & Jordan.

A. Schwarz, 2 three-st'y dwells., 150-152 Illinois St.; cost, $10,000; architect, T. Karls.

Wm. Brushaber, 2 two-st'y dwells., 130-132 Coulter St.; cost, $5,000; architect, A. Boessler; builder, W. Schwerin.

W. H. Launder, 2 two-st'y dwells., 3630-3632 Stanton Ave.; cost, $6,000; architect, Wm. Drake; builder, Wm. Pound.

F. Schultz, two-st'y dwell., 341 West Erie St.; cost, $3,000.

D. O'Connell, two-st'y dwell., 365 Thirty-fourth St.; cost, $4,000.

J. Wheeler, three-st'y dwell.; 164 Lasalle Ave.; cost, $7,500; architect, J. Zittell; builder, L. Wick.

C. Lindlay, two-st'y dwell., 73 Johnson St.; cost, $2,500.

R. S. Critchell, three-st'y dwell., 115 Centre Ave.; cost, $5,500; architect and builder, G. A. Morehouse.

F. Dusck, two-st'y store and dwell., 1011 Blue Island Ave.; cost, $9,000; builder, A. Loula.

C. Dennely, two-st'y barn, 431-433 North State St.; cost, $3,000.

D. Pyne, two-st'y dwell., 271 Centre Ave.; cost, $3,800; architect, Kline; builder, T. Fitzgerald.

J. Gillespie, 2 two-st'y dwells., 474 West Congress St.; cost, $7,000; architect, W. Thomas.

Cincinnati.

BUILDING PERMITS. — Wm. Miller, two-st'y brick building, cor. Ohio Ave. and Lion St.; cost, $2,000.

Elias Ehler, three-st'y brick building, 199 East Front St.; cost, $4,000.

Otto Kramer, two-and-one-half-st'y brick building, and one-and-one-half-st'y frame dwell., Molitor St.; cost, $10,000.

Jno. Albert, addition, two-st'y brick building, 52 Oehler St.; cost, $2,000.

J. E. Simon, two-st'y frame dwell., Fremont St., n of Pine St.; cost, $2,800.

Jester & Boska, two-st'y double brick building, Browne St.; cost, $4,000.

Fred. Buening, three-st'y brick building, Martin St.; cost, $4,300.

Wm. Strunk, two-st'y frame dwell., cor. Locust and Lane Sts.; cost, $2,650.

Additions and repairs costing, $8,703.

Total permits to date, 684.

Total amount to date, $2,672,333.

New York.

THE OUTLOOK.—Building prospects are a trifle better, the strikes being virtually over, still we can not anticipate any activity before next spring.

STORES.—An important alteration is that of the old church on Twenty-third St., bet. Fifth and Sixth Aves., which is to be altered into stores, with a frontage on West Twenty-second St., at Nos. 37, 39, and 41, the plans being those of Mr. W. Wheeler Smith.

ARMORIES. —The competing architects on plans for the new armories are Messrs. C. C. Haight, Douglass Smythe, Jas. E. Ware, Theodore Weston, and McKim, Mead & White.

COLLEGE.—Mr. W. H. Vanderbilt having given $500,000 for the purpose, the College of Physicians and Surgeons of New York will have a handsome building erected for them on Tenth Ave., bet. Fifty-ninth and Sixtieth Sts.; architect not yet selected.

HOSPITAL.—Plans have been filed by the Trustees of the Roosevelt Hospital for an annex on the west side of the hospital building, which will be five-st'y high, and 50′ x 170′. It will be built of brick and stone, and will cost $130,000.

SCHOOL-HOUSE. — A plan has been filed for a new school-house at the n w cor. of First Ave. and Seventieth St. It will be of brick, four-st'y high, and will cost $110,000.

BUILDING PERMITS.— *Eleventh Ave.*, e s, from Sixty-first to Sixty-second St., 8 five-st'y brick tenements

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BUILDING INTELLIGENCE.

and stores, tin roofs; cost, each, $20,000; owner, Abraham Jonas, 39 Ridge St.; architect, G. W. Spitzer.

One Hundred and Fifty-first St., n s, 300′ w Third Ave., 2 three-st'y frame tenements, tin roofs; cost, $4,500 and $3,000; owner, Joseph Messerschmidt, 601 North Third Ave.; architect, A. Arctander.

One Hundred and Forty-eighth St., n s, 275′ w Courtland Ave., four-st'y frame tenement, tin roof; cost, $6,000; owner, M. E. Robinson, 708 East One Hundred and Forty-fifth St.

Thirty-first St., s s, 300′ e First Ave., two-st'y brick refrigerator building, tin roof; cost, $10,000; owner, E. C. Swift, 9-11 Devoe Ave., West Washington Market; architect, L. C. Wilker; builder, B. F. Bailey.

Fifty-eighth St., n s, 283′ e Tenth Ave., five-st'y brick and stone hospital, slate and copper roof; cost, $130,000; owners, Trustees of Roosevelt Hospital; Jas. Roosevelt, chairman, 31 Pine St.; architect, John G. Prague.

Eldridge St., No. 142, five-st'y brick factory, tin or gravel roof; cost, $19,000; owner, Peter Reidenbach, 48 Delancey St.; architect, Wm. Graul.

Sixty-eighth St., n s, 210′ e Third Ave., 5 three-st'y brown-stone front dwells., tin roofs; cost, each, $10,-000; owner, Wm. C. Schermerhorn, 49 West Twenty-third St.; architect, H. J. Hardenbergh; builder, John Banta.

Sixty-eighth St., n s, 310′ e Third Ave., 5 three-st'y brown-stone front dwells., tin roofs; cost, each, $10,-000; owner, R. T. Auchmuty, treasurer, 61 University Pl.; architect and builder, same as last.

Waverley St., s s, 200′ w Monroe Ave. (24th Ward), 2 three-st'y frame dwells., and one-st'y frame carriage-house, tin and slate roofs; cost, $4,300; owner, Susan Westcott; builders, J. W. Crawford & Son, and Jesse Newman.

Madison Ave., s e cor. Williamsbridge Road, three-st'y frame dwell., tin roof; cost, $3,00); owner, Elizabeth de Layer, Williamsbridge; architect, W. W. Gardiner; builder, Henry A. Sherwood.

Avenue A, n e cor. Seventy-fifth St., five-st'y bric k factory, tin roof; cost, $16,000; owner, P. H. McManus, 110 East Ninety-first St.; architect, John Brandt.

Avenue A, e s, 25′ n Seventy-fifth St., five-st'y brick tenement, tin roof; cost, $16,000; owner and architect, same as last.

Fifty-fourth St., n s, 275′ w Tenth Ave., 2 five-st'y brick tenements, tin roofs; cost, each, $16,000; owner, Jacob New, 109 Grand St.; architect, J. H. Valentine.

Seventieth St., n s, 425′ w Ninth Ave., 5 four-st'y brownstone front dwells., tin roofs; cost, each, $24,-000; owner, Henry V. Hamilton, 2078 Fifth Ave.; architect, J. H. Valentine.

One Hundred and Fifth St., s s, 255′ w Fourth Ave. four-st'y brick tenement, tin roof; cost, $12,500; owner, Dennis W. Grath, 35 East One Hundred and Fourth St.; architect, Jos. M. Dunn.

Lexington Ave., n e cor. Seventy-fifth St., 5 five-st'y brown-stone front tenements and store, tin roofs; cost, corner, $17,000; others, each, $13,000; owner, Bernard Wilson, 337 East Fifty-eighth St.; architects, A. B. Ogden & Son.

Sixty-second St., n s, 200′ e Madison Ave., 2 three-st'y brick stables, tin and slate roofs; cost, each $16,-000; owner and builder, Robert B. Lynd, 26 East Seventy-second St.

Sixty-seventh St., n s, 93′ e Fourth Ave., one-st'y brick building, slate roof; cost, $3,000; owner, Hahneman Hospital, Rogers H. Lyon, secretary, 340 West Twenty-ninth St.; architect, J. E. Terhune.

East Seventy-sixth St., No. 416, two-st'y brick stable, tin roof; cost, $3,000; owner, Henry Wiesen, 529 East Thirteenth St.; architect, Wm. Fernschild.

Bank St., Nos. 117, 119, *and* 121, 3 five-st'y brick tenements, tin roofs; cost, total, $32,000; owner, John Schreyer, 465 West Seventy-first St.; architect, Wm. F. Niebur; builders, Niebur Bros. and owner.

ALTERATIONS.—*Third Ave., Nos.* 1896 *and* 1898, internal alterations and new store fronts; cost, $3,000; lessee, S. Smith Stratton, 178 East One Hundred and Fourth St.; architects, Cleverdon & Putzel.

Broadway, No. 1257, one-st'y brick extension, etc., tin roof; cost, $4,000; owner, Street & Boyle, on premises; architect, W. H. Smith; mason, J. J. Spearing.

Philadelphia.

BUILDING PERMITS.—*Palethorp St.*, bet. Lehigh Ave. and Somerset St., 2 two-st'y dwells., 16′ 6″ x 36′; P. Herron, contractor.

Sixth St., cor. Indiana Ave., two-st'y store and dwell., 18′ x 58′; S. R. Stewart, contractor.

Sixth St., cor. Cambria St., three-st'y store and dwell., 17′ x 55′; Robt. Buchanan, owner.

Haverford Ave., n of Brooklyn St., 4 two-st'y dwells., 14′ x 42′; J. T. Winner, owner.

Fifth St., n of Cambria St., two-st'y dwell., 16′ x 44′; Jno. F. Betzold, owner.

Thirty-second St., n of Wharton St., 9 two-st'y dwells., 15′ x 27′; Alex. Wilson, owner.

Bermuda St., cor. Tucker St., chemical building, 20′ x 40′; Dr. H. W. Jayne, owner.

Ringgold St., n of Montgomery Ave., 7 two-st'y dwells., 14′ x 45′; J. W. Cooiston, owner.

Fourth St., n of Oxford St., three-st'y dwell., 17′ x 28′; A. T. Richards, contractor.

Heberton St., bet. Twenty-first and Twenty-second Sts., two-st'y stable, 35′ x 45′; B. Kitchen & Sons, contractors.

Huntingdon St., n of Fillmore St., 2 two-st'y dwells., 14′ x 42′; Jno. Cunningham, contractor.

Hancock St., n of Lehigh Ave., two-st'y dwell., 18′ x 40′; Frank Stribig, contractor.

Frankford Road, bet Erie Ave. and Railroad, three-st'y dwell., 18′ x 48′; J. S. Baldt & Son, contractors.

Wiser St., w of Thompson St., three-st'y dwell., 16′ x 46′; Sebastian Heim, contractor.

Orange St., No. 1418, two-st'y dwell., 15′ 7″ x 30′ 3″; Chas. R. Wildey, contractor.

Centre St., bet. Morton and Wilson Sts., 2 two-st'y dwells., 14′ x 30′; Henry Richard, owner.

Ninth St., s of Buttonwood St., three-st'y store and dwell., 17′ 2″ x 18′ 10″; J. J. Hill, contractor.

Neff St., cor. Adams St., 4 two-st'y dwells. (one with store), 15′ x 40′; A. McClay, contractor.

Fourth St., s of Cambria St., three-st'y dwell., 17′ x 42′; Albert Hincks, contractor.

North Fourth St., No. 2238, three-st'y dwell., 16′ x 50′; C. A. Blessing, owner.

Fifty-fourth St., near Wyalusing Ave., three-st'y dwell., 14′ x 30′; Harry Pettit, contractor.

Trenton Ave., cor. Dauphin St., third st'y addition to mill, 30′ x 42′; W. D. Huston, contractor.

Thirty-fifth St., w of Queen Lane, three-st'y dwell., 17′ x 37′; C. C. Linnahan, contractor.

Frankford Road, s of Westmoreland St., two-st'y dwell., 29′ x 45′; Jno. Cunningham, contractor.

Spring St., n of Wood St., two-st'y dwell., 14′ x 32′; S. S. Keely, owner.

Spruce St., No. 2307, two-st'y stable, 32′ x 60′; McFetridge & McConnell, contractors.

Tioga St., n of Tenth St., three-st'y dwell., 18′ x 45′; Herman Menze, owner.

South St., n of Sixty-first St., two-st'y dwell., 17′ 8″ x 32′; Jacob Zell, contractor.

St. Louis.

BUILDING PERMITS. — Thirty-five permits have been issued since our last report, eighteen of which are for unimportant frame houses, and those of the rest worth $2,500 and over are as follows: —

J. Tschec, two-st'y dwell.; cost, $3,000; Jos. Schusler, contractor.

BUILDING INTELLIGENCE.

T. I. Burke, 2 adjacent two-st'y dwells.; cost, $8,-000; Rothe & Rattermann, contractors.

T. I. Burke, 2 adjacent two-st'y dwells.; cost, $6,-000; Rothe & Rattermann, contractors.

T. G. Zimmermann, 4 adjacent two-st'y dwells.; cost, $5,000; Beinke, architect; W. C. Popp, contractor.

O. H. Roessell, two-st'y dwell.; cost, $4,300; E. Jansen, architect; Remmers & Thompson, contractors.

H. Sextor, two-st'y dwell.; cost, $3,000; J. V. Mayors, contractor.

J. Jud, 2 adjacent two-st'y tenements; cost, $4,000; P. Sauerwein, contractor.

Robert McNulty, 2 adjacent two-st'y tenements; cost, $4,500; Jno. Lowe, contractor.

Aug. Barnshein, two-st'y dwell.; cost, $4,000; B. J. Goesse, architect; sublet.

Julius J. Yaeger, 2 adjacent two-st'y dwells.; cost, $4,000; Herman & Schumacher, contractors.

Geo. Dennison, two-st'y brick dwell.; cost, $5,000; C. Helmers, architect; C. Gerhardt, contractor.

Rev. S. M. Brennan, two-st'y brick dwell.; cost, $3,000; McNamara, architect; J. P. Gillick, contractor.

A. W. Koenig, two-st'y brick dwell.; cost, $2,750; E. Mortimer, architect; Jacob Schenk, contractor.

George Elbreder, two-st'y brick dwell.; cost, $2,-800; Volk & Tacke, contractors.

F. S. Kaiser, two-st'y brick dwell.; cost, $3,500; Wm. Herkenhoff & Bro., contractors.

A. H. Laumann, 4 adjacent two-st'y dwells.; cost, $7,500; B. J. Goesse, architect; Goesse & Remmers, contractors.

J. M. Moran, 2 adjacent two-st'y dwells.; cost, $3,-100; Jos. Wharton, contractor.

Aug. Tietzel, two-st'y brick dwell.; cost, $5,500; C. May, architect; B. Holster, contractor.

Nathan Cole, 5 adjacent two-st'y dwells.; cost, $12,500; A. E. Cook, contractor.

H. Rose, 2 adjacent two-st'y dwells., cost, $3,000; Jno. Hecker, contractor.

Wm. Vernon, 5 adjacent two-st'y dwells.; cost, $9,000; T. Furlong, architect; W. Saine, contractor.

A. Steinkamp, two-st'y brick dwell.; cost, $2,700; F. Mueller, contractor.

J. D. Berger, 3 adjacent two-st'y tenements; cost, $4,800; A. Fenner, contractor.

Ittner Bros., 6 adjacent brick dwells.; cost, $12,-000; J. C. Brockmeier, contractor.

Mrs. B. Tracy, two-st'y brick dwell.; cost, $2,500; W. Johnson, architect; T. J. Gunn, contractor.

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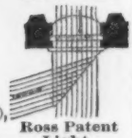

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462

BUILDING INTELLIGENCE.

General Notes.

ST. PAUL, MINN. — Episcopal Mission, two-st'y brick double store and dwell., 52′ x 56′, on the e s of Rice St., bet. Summit and College Aves.; cost, $6,000.

Michael O'Brien, three-st'y double brick stores and dwells., 44′ x 45′, on the s s of John St., between Seventh and Eighth Sts.; cost, $5,000.

E. H. Steele, 2 two-st'y wooden dwells. and barn, w s Grand Ave., bet. Twenty-seventh and Twenty-eighth Sts.; cost, $4,600.

F. W. Hunter, two-st'y frame double tenement, Elm St.; cost, $5,500.

Mary E. Sherwood, one-and-one-half-st'y frame dwell. and barn, Oakland Ave.; cost, $3,300.

S. Bergman, East Fifth St., frame tenement; cost, $6,000.

F. P. Howell, two-st'y frame and brick-veneered dwell., 48′ x 56′, on the n s of Sherburne Ave., between Grant and Jackson Sts.; cost, $10,000.

E. A. Henderson, two-st'y frame tenement-block, 54′ x 56′, on the e s of Farrington Ave., between Selby and Laurel Aves., cost, $4,900.

Miss Ella M. Chadwick, two-st'y frame dwell., 22′ x 57′, on the n s of Nelson Ave., between Louis and Farrington Aves.; cost, $3,200.

Rheaume & St. Pierre, three-st'y brick block of stores and dwells., 60′ x 60′, on the n s of Seventh St., bet. Minnesota and Robert Sts.; cost, $28,000.

Bids and Contracts.

ATLANTA, GA. — The following are the bids on the entire work on the Georgia capitol: —

D. W. Thomas, Akron, O., $1,097,974.25.

Miles & Horn, Toledo, O., according to the original specifications, $922,124.47; with a slight change in the roof, $957,096; with a change in the foundation, $914,766; with a modification of the light shaft, $910,121; to substitute cheaper material in various places, $776,302.

Hallowell Granite Co., Chicago, upon the original schedule, $932,579.29; with modifications, $888,277.93; with further changes, $867,727.80.

Chas. Pierce & Co., Indianapolis, Ind., $922,860.07; of oolitic limestone, $929,356.22; of Georgia marble, $1,014,960.47; of Georgia granite, $1,141,784.07.

A. E. Forten & Co., Chicago, building complete, except the cut-stone work, $777,816.

CINCINNATI, O.—The following bids were received on the County Court-House; James W. McLaughlin, architect.

Brickwork; H. B. Lucky & Son, $42,707 (*rejected*).
Henry Wriet & Son, $64,000 (*rejected*).
J. G. McGarvey & Bro., $41,995.
Jacob Magley & Sons, $44,721.
J. M. Blair & Son, $44,875.
W. A. Megrue, $45,000.
Mehmert & Kohff, $77,500.
Cast and wrought-iron: —
M. Clements, $85,800.
Bromet & Co., $86,000.
Queen City Foundry, $91,695.
Howe, Ketchum & Co., $99,703.
Snead & Co., $105,997.
Union Car Foundry Co., $103,000.
Manly & Cooper M'fg Co., $106,500.

ROCHESTER, N. Y. — Contracts just let for a factory-building on North St. Paul Street, for Tawman & Erbe; building to be 35′ x 111′, of brick and stone, partly fire-proof; cost, $18,600; T. Seitz, contractor; Jas. G. Cutler, architect.

Work just begun on a frame house on Park Ave., for Mr. Henry Goold; house to be 30′ x 45′, finished in hard wood, to cost $5,000; J. B. Pike, contractor; Jas. G. Cutler, architect.

PROPOSALS.

COURT-HOUSE FRONT. [At Woodstock, Va.]

Sealed proposals will be received at the office of the Clerk of the County Court of Shenandoah County, **until Monday, November 24, 1884, 10 o'clock,** A.M., for furnishing the materials and performing the necessary labor for the erection of a court-house front at Woodstock, Va.

The building to be of brick, with stone facing, 40′ x 75′, two-st'y, with mansard roof and tower, with the clerk's offices (Circuit and County) on the lower floor fire-proof.

Plans and specifications may be seen at the County Clerk's Office, or at the office of T. F. Schneider, Architect, 933 F St., n w Washington, D. C.

Each bid must state the time required for the completion of the building, and a proper bond will also be required of the person who is awarded the contract.

The Board of Supervisors reserve the right to reject any and all bids.

By order of the Board. L. S. WALKER,
464 Clerk Board Supervisors Shen. Co. Va.

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The finest and most extensive structures in this country are painted with these paints, among them, the U. S. Capitol at Washington; Light Houses and Life Saving Stations; U. S. Custom House at Chicago; Navy Yard Buildings; Metropolitan Elevated R. R; Oriental and Manhattan Beach Hotels; Oriental and Manhattan Beach Hotels; the "Argyle" and Cottages at Babylon; Hygeia Hotel, Fortress Monroe; Thousand Islands House; Crossman House; Forest Hill House, Franconia, N. H.; Sinclair House, Bethlehem, N. H.; Fort Point House, Stockton, Me.; Pequot House and Cottages, New London, Conn.; Appledore House, Isle of Shoals: the "Dakota," New York City, and thousands of other public and private buildings. Our pamphlet on

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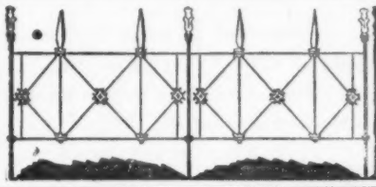

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Visitors' Correspondence may be addressed in care of this establishment.

HENRY LORD GAY, Proprietor. T. S. HOTCHKISS, Manager.

PROPOSALS.

BREAKWATER. [Delaware Bay.]

U. S. ENGINEER OFFICE, 1125 GIRARD STREET,
PHILADELPHIA, PA., October 16, 1884.

Sealed proposals, in triplicate, will be received at this office **until 12 o'clock,** M., **of Saturday, November 15, 1884,** and opened immediately thereafter, for 23,000 tons of stone, more or less, to be used in the construction of the Delaware Breakwater Harbor.

For blank forms, specifications, etc., apply at this office. W. H. HEUER,
463 Major of Engineers, U. S. Army

HEADSTONES. [At Washington, D. C.]

OFFICE OF NATIONAL CEMETERY,
WASHINGTON, D. C., September 27, 1884.

Sealed proposals, in triplicate, with a copy of this advertisement attached to each, will be received at this office **until 12** M., **Thursday, November 6, 1884,** for furnishing 4,000 headstones, more or less, of American white marble, for unmarked graves of Union soldiers, under the provisions of the Acts of Congress of March 3, 1873, and February 3, 1879.

Specifications for the work, blank forms of proposals, and all necessary information on the subject will be furnished on application to this office.

Proposals are required to be submitted on the forms supplied for the purpose.

The right is reserved to reject any or all bids.

PROPOSALS.

Bids should be indorsed, "Proposals for Furnishing Headstones," and addressed to the undersigned.

R. N. BATCHELDER,
461 Deputy Quartermaster Gen., U. S. A.

POST-OFFICE. [At Galt, Ont.]

DEPARTMENT OF PUBLIC WORKS,
OTTAWA, October 2, 1884.

Sealed tenders addressed to the undersigned, and endorsed "Tender for Post-Office, etc., Galt, Ont.," will be received **until Thursday, the 30th inst.,** inclusive, for the erection of post-office, etc., at Galt, Ont.

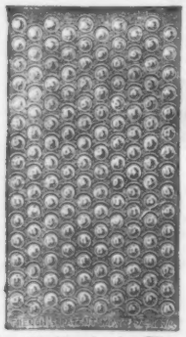
Plans and specifications can be seen at the Department of Public Works, Ottawa, and at the Post-Office, Galt, on and after Friday, the 10th day of October next.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied, and signed with their actual signature.

Each tender must be accompanied by an accepted bank cheque, made payable to the order of the Honorable the Minister of Public Works, equal to five per cent of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted, the cheque will be returned.

The Department will not be bound to accept the lowest or any tender.

By order, F. H. ENNIS,
461 Secretary.



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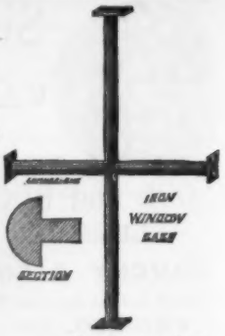

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[Seekonk River Bridge, R. I.]

PROVIDENCE, R. I., October 18, 1884.

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461

HARD-PINE.

[Seekonk River Bridge, R. I.]

PROVIDENCE, R. I., October 18, 1884.

Sealed proposals will be received **until 12 M., October 29, 1884,** for furnishing before January 1, 1885, about 210,000 feet B. M. of Southern hard-pine timber and plank. For schedule of sizes and further particulars, address Seekonk River Bridge Commission, Gano St., Providence, R. I. 461

ARMY BUILDINGS.

[At Camp Rice, Tex.]

HEADQUARTERS DEPARTMENT OF TEXAS,
OFFICE OF CHIEF QUARTERMASTER,
SAN ANTONIO, TEX., October 11, 1884.

Sealed proposals in triplicate, subject to usual conditions, will be received at this office **until 12 o'clock, noon, on the 11th day of November, 1884,** at which time and place they will be opened in presence of bidders, for the construction at Camp Rice, Tex., of 17 brick buildings, according to plans and specifications on file in this office, which will be furnished on application, together with blank proposals, and circulars giving full instructions as to manner of bidding and terms of contract.

The Government reserves the right to reject any or all proposals.

Envelopes containing proposals should be marked "Proposals for Construction at Camp Rice, Tex.," and addressed to the undersigned. J. G. C. LEE,

462 Major and Chief Quartermaster.

PAINTING, BRONZING, AND POLISHING.

[At Cincinnati, O.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., October 17, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 8th day of November, 1884,** for all the painting, bronzing, and polishing required for the custom-house and post-office building at Cincinnati, O., in accordance with specification, copies of which and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. M. E. BELL,

462 Supervising Architect.

CITY-HALL.

[At Richmond, Va.]

CITY ENGINEER'S OFFICE,
RICHMOND, VA., October 15, 1884.

Sealed proposals are invited **until December 1st, at 12 o'clock, M.,** for building a new city-hall at Richmond, Va.

Drawings, specifications, and printed forms can be seen at this office.

The Committee on Grounds and Buildings reserves the right to reject any and all bids.

For further information apply to the undersigned.

466 W. E. CUTSHAW, City Engineer.

ARMY BARRACKS.

[At Newport, R. I., and New York, N. Y.]

OFFICE OF CHIEF QUARTERMASTER,
DEPARTMENT OF THE EAST,
GOVERNOR'S ISLAND, N. Y. H., October 15, 1884.

Sealed proposals in triplicate, subject to the usual conditions, will be received at this office, and the Offices of the Quartermaster at the posts mentioned below, **until 12 o'clock, M., Eastern time, on the 15th day of November, 1884,** at which time and places they will be opened in the presence of the bidders, for the construction of one set of barracks of brick, or frame, at each of the posts of Fort Adams, R. I., and Fort Hamilton, N.Y. H., in accordance with plans and specifications, which can be seen at this office, and at the Offices of the Post Quartermaster at Fort Adams, R. I., and Fort Hamilton, N. Y.H.

One copy of this advertisement should be securely attached to each triplicate proposal, and be mentioned therein as comprising part of it.

Blanks for proposals and information as to manner of bidding, etc., can be obtained at this office.

Proposals must be accompanied by a guarantee with two sureties in the sum of two hundred dollars.

A proposal not accompanied by such a guarantee will not be considered.

Envelopes containing proposals should be marked "Proposals for Construction of Barracks."

The Government reserves the right to reject any or all bids. ALEX. J. PERRY,

462 Assistant Quartermaster General, U. S. Army.

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PROPOSALS.

RIP-RAP GRANITE.

[At Block Island, R. I.]

ENGINEER OFFICE, U. S. ARMY,
NEWPORT, R. I., October 6, 1884.

Sealed proposals, in duplicate, will be received at this office **until 12 o'clock, noon, on Tuesday, the 28th day of October, 1884,** at which time they will be opened in presence of bidders, for furnishing rip-rap granite for the breakwater at Block Island, R. I., under the appropriation by the Act of Congress of July 5, 1884, of $15,000.

The United States reserves the right to reject any or all proposals.

Specifications, blank proposals, and full information as to the manner of bidding, conditions to be observed by bidders, and terms of contract and payment, will be furnished on application to this office.

GEORGE H. ELLIOT,

461 Lt.-Col. of Engineers.

IRON-WORK.

[At Jackson, Tenn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., October 18, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 1st day of November, 1884,** for furnishing and putting in place complete, the iron columns and girders required for the court-house, post-office, etc., at Jackson, Tenn., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening, will not be considered. M. E. BELL,

462 Supervising Architect.

JOINERS WORK AND WOOD FLOORING.

[At Jackson, Miss.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., October 21, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 11th day of November, 1884,** for furnishing and fixing in place all the joiner work and wood flooring required for the court-house and post-office building at Jackson, Miss., in accordance with drawings and specification, copies of which may be seen and any additional information obtained on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. M. E. BELL,

462 Supervising Architect.

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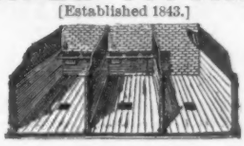

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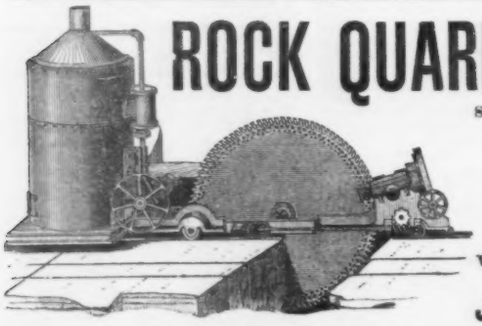
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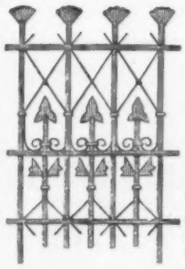

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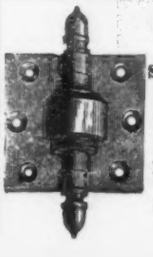

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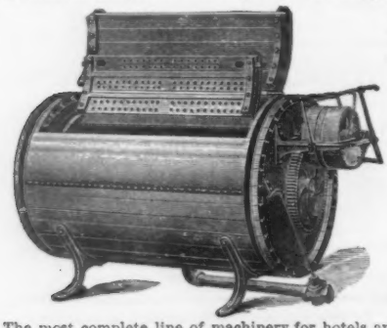

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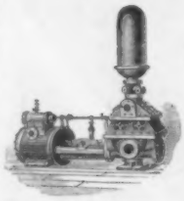

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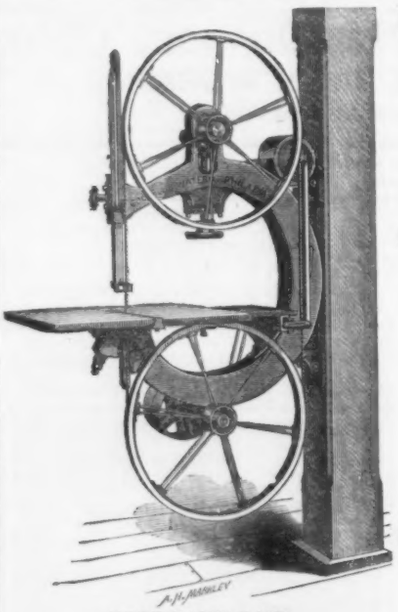
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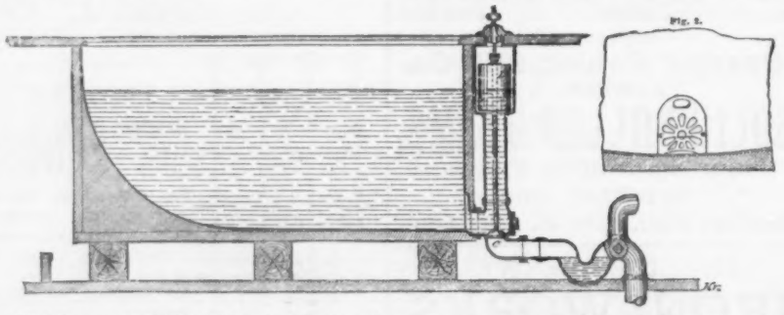

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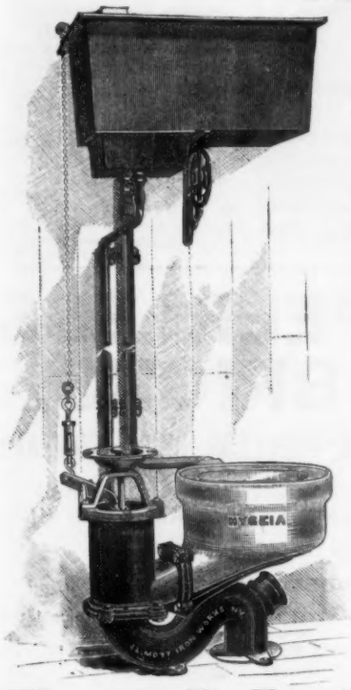

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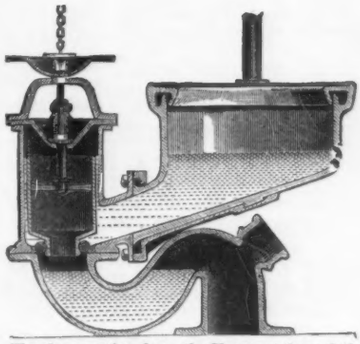

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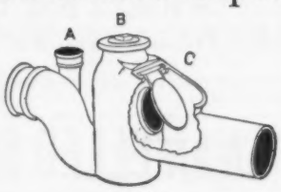

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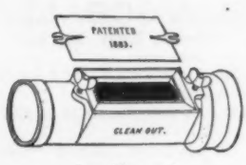

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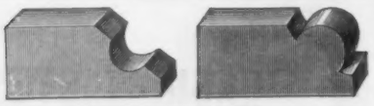

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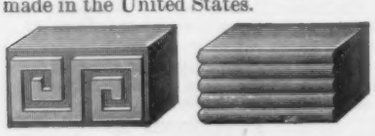

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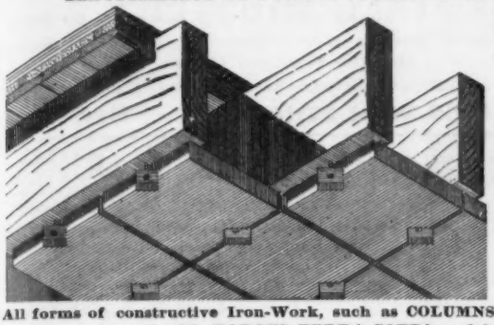

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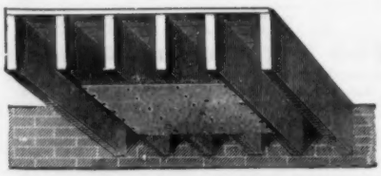

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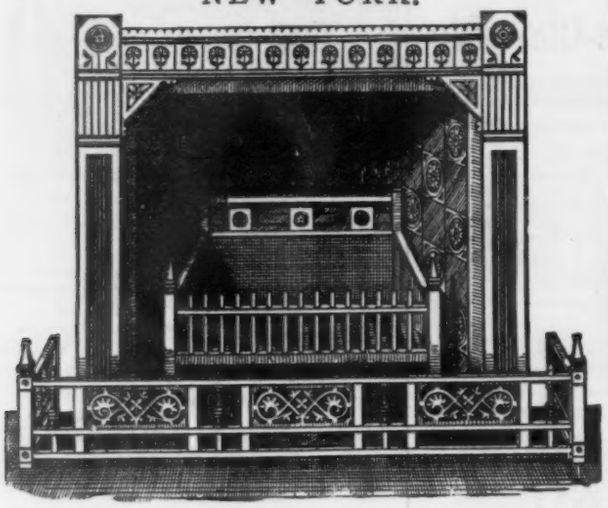

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